NAVAL
POSTGRADUATE
SCHOOL

MONTEREY, CALIFORNIA

THESIS

AN EXPLORATORY ASSESSMENT OF THE UNITED STATES NAVAL ACADEMY ETHICAL DECISION MAKING INSTRUMENT

by

Wayne Beyer

September 2007

Thesis Advisor:	Linda Mallory
Second Reader:	Brad Johnson

Approved for public release; distribution is unlimited

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			*Form Approved OMB No. 0704-0188*
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.			
1. AGENCY USE ONLY *(Leave blank)*	**2. REPORT DATE** September 2007	**3. REPORT TYPE AND DATES COVERED** Master's Thesis	
4. TITLE AND SUBTITLE: An Exploratory Assessment of the United States Naval Academy Ethical Decision Making Instrument			**5. FUNDING NUMBERS**
6. AUTHOR(S) Major Wayne Beyer			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			**8. PERFORMING ORGANIZATION REPORT NUMBER**
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			**10. SPONSORING/MONITORING AGENCY REPORT NUMBER**
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.			**12b. DISTRIBUTION CODE**
13. ABSTRACT: This study examined the development of a survey called the Ethical Decision Making Instrument (EDMI). The study answered two questions regarding moral development at the Naval Academy. The first question involved determining if there is a difference in moral thinking between year groups at the Naval Academy. The second question involved determining whether men and women think differently in regards to moral reasoning and decision making. In answering the first question, the study determined that a significant change in moral cognitive thought occurs in the Brigade of Midshipmen, primarily after the first year. Answering the second question, the study determined that differences in the moral cognitive thought based on gender exist, but only slightly. The data also showed that a Midshipman's propensity to recognize when a moral issue exists actually decreases after his or her first year. Also, a Midshipman's likelihood to indicate that he or she would take appropriate action in a morally challenging situation also decreases after the first year. The study concludes with recommendations for further research involving the dissection of the EDMI and its many possibilities.			
14. SUBJECT TERMS Moral Development, Ethical Decision Making, Moral Reasoning			**15. NUMBER OF PAGES** 107
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	**18. SECURITY CLASSIFICATION OF THIS PAGE** Unclassified	**19. SECURITY CLASSIFICATION OF ABSTRACT** Unclassified	**20. LIMITATION OF ABSTRACT** UU

THIS PAGE INTENTIONALLY LEFT BLANK

AN EXPLORATORY ASSESSMENT OF THE UNITED STATES NAVAL ACADEMY ETHICAL DECISION MAKING INSTRUMENT

Wayne R. Beyer Jr.
Major, United States Marines
B.A., Northern Illinois University, 1994

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN LEADERSHIP AND HUMAN RESOURCES DEVELOPMENT

from the

NAVAL POSTGRADUATE SCHOOL
September 2007

Author: Wayne R. Beyer Jr.

Approved by: Linda Mallory
                 Thesis Advisor

                 Brad Johnson
                 Second Reader

                 Robert N. Beck., Dean
                 Graduate School of Business and Public
                 Policy

iii

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

This study examined the development of a survey called the Ethical Decision Making Instrument (EDMI). The study answered two questions regarding moral development at the Naval Academy. The first question involved determining if there is a difference in moral thinking between year groups at the Naval Academy. The second question involved determining whether men and women think differently in regards to moral reasoning and decision making. In answering the first question, the study determined that a significant change in moral cognitive thought occurs in the Brigade of Midshipmen, primarily after the first year. Answering the second question, the study determined that differences in the moral cognitive thought based on gender exist, but only slightly. The data also showed that a Midshipman's propensity to recognize when a moral issue exists actually decreases after his or her first year. Also, a Midshipman's likelihood to indicate that he or she would take appropriate action in a morally challenging situation also decreases after the first year. The study concludes with recommendations for further research involving the dissection of the EDMI and its many possibilities.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

LIST OF FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

First I would like to thank my wife for all her support and patience during the many hours put into this thesis writing process. She truly makes me a better man, and all of my accomplishments can be directly attributed to the strong support she lovingly gives me. I would also like to extend special thanks to Dr. Linda Mallory and Dr. Brad Johnson for their tireless support and consummate professionalism throughout. They both have been tremendous teachers, mentors, and friends, and have greatly contributed to my continuing development both personally and professionally.

THIS PAGE INTENTIONALLY LEFT BLANK

I.   INTRODUCTION

A.   BACKGROUND

This research will involve a close look at a critical component of The United States Naval Academy's stated mission: "To develop midshipmen morally, mentally and physically and to imbue them with the highest ideals of duty, honor and loyalty..." (USNA, 2002, ¶ 1). The first charge for the Academy is to develop midshipmen morally. Considering all the manpower, money, time, curriculum, and emphasis spent on developing the morality of Midshipmen, how do we know if we are accomplishing the mission, and how can we quantify moral development? Over the history of the Naval Academy, ethics curriculum has come and gone. In 1993, with an engineering department cheating scandal, the Academy undertook a major change in the approach to moral development. In addition to the creation of a Character Development Division and an "ethics across the curriculum approach" to education, the Navy created the Center for the Study of Professional Military Ethics and located it at the Naval Academy in order to address these issues. These actions underscore the importance the Navy and the Naval Academy have placed on moral development.

With this in mind, the Ethics Department at the Naval Academy developed the Ethical Decision Making Instrument (EDMI), which is a survey used to measure moral development. Part I of the EDMI, Moral Theories, identifies seven distinct schools of thought or, moral, philosophy-based ideologies that an individual uses when making moral decisions.

Part II of the EDMI, Defining Issues and Moral Intensity, was developed to a) Measure moral development based on the theories of James Rest, which defines the decision-making process as consisting of four components: 1) Recognizing a moral issue, 2) Making a moral judgment, 3) Forming a moral intent, and 4) Behaving in an ethical manner; and b) Combine the theories of Rest with Jones' Issue Contingent Theory, which postulates that the intensity of the situation should influence each stage of the decision-making process. Following the Canadian model, the EDMI incorporates into its assessment five of the six moral intensity dimensions: 1) magnitude of consequences, 2) social consensus, 3) probability of effect, 4) temporal immediacy, and 5) proximity.

B. PURPOSE

This research explores the Naval Academy's Ethical Decision Making Instrument (EDMI) which is a modified version of the Canadian Forces, Defence Ethics Survey.

C. GOAL

The goal of this research is to analyze portions of the results from the first EDMI survey given to Midshipmen to determine if there is a difference between the cognitive moral decision making of Midshipmen by class and by gender.

D. SCOPE

The scope will include: (1) a review of the United States Naval Academy's stated mission, including the history and fundamental background of moral development theory. (2) a description of the development of the Naval Academy's Ethical Decision Making Instrument (EDMI), as

well as a description of the instrument itself. (3) a description of the data used for the thesis from actual Midshipmen in the Classes of 2006 through 2009.

E.   METHODOLOGY

Two questions will be addressed in this study. The first question involves determining if there is a difference in cognitive moral thinking between year groups at the Naval Academy. The second question involves a test of the research in order to determine if men and women indeed think differently in regards to moral issues and decision making. This will be accomplished by applying the principles of population mean testing to null hypotheses.

F.   ORGANIZATION OF STUDY

This study will begin with a review of the literature including a background on the development of the Ethical Decision Making Instrument (EDMI), which is the survey examined in the study. This will be followed by a discussion of how the information was collected, what the hypotheses are, and how the data will be presented in this research. This will be followed by an analysis of the data, conclusions, and recommendations.

THIS PAGE INTENTIONALLY LEFT BLANK

II. LITERATURE REVIEW

A.   INTRODUCTION

Despite all the attention given to ethics and moral development at the academy, a recent study by the Naval Postgraduate School found that the Midshipmen believe too many ethics and character programs exist in the curriculum, and that these programs neutrally impact their actual moral development (Clark, 2004). Although there are many books, theories, and philosophies that delve deeply into ethics and moral development (Rest, 1999), there is debate over how to measure ethical and moral development (Rest, 1997). Therefore, after an exhaustive, evaluative process, the Naval Academy searched for, identified, and modified a test they believe to be the best instrument for assessing the moral awareness, reasoning, and courage of an individual. This instrument is the Ethical Decision Making Instrument or EDMI; it is a modification of the Canadian Armed Forces, Defence Ethics Survey. The EDMI was administered to a random sample of 1,750 Midshipmen in the fall of 2005, of which 812 were usable. This research involves an exploration of the EDMI data to determine if there is a difference between the cognitive moral decision making of Midshipmen by class and by gender.

B.   MISSION OF THE NAVAL ACADEMY

The United States Naval Academy's stated mission: "To develop midshipmen morally, mentally and physically and to imbue them with the highest ideals of duty, honor and loyalty..." (USNA, 2002, ¶ 1). The genesis of the effort behind the review of the ethics curriculum and development

5

of the EDMI arose from a simple question: century, Piaget provided the foundation for the field of ethical theory by further exploring this basic concept. By observing the way boys played marbles, he documented how the human psyche grew and changed, establishing the idea that moral development proceeded in stages (Coleman, 2004). Kohlberg and Rest followed and are the two theorists most associated with moral development.

A basic understanding of moral development theory can be simplified as follows: As people develop, they develop an increasingly mature way to think about problems. In other words, individuals will grow morally, as well as physically and intellectually. Moral development theory presumes we have an innate sense that some reasons are better than other reasons regarding our decisions. People with little life experience give immature reasons; people with more experience give more complex reasons. It is life experiences and then reflection on those experiences that cause one to develop morally, thus getting people to reflect on life experiences ensures they will mature morally.

Moral development theory is primarily concerned with the reasons for a decision – not the decision itself. The theory suggests that moral reasoning becomes more complex with age, maturity, life experiences, etc. and that moral cognition, like any other skill, can be developed. Moral development theory presumes all people are developing morally at all times; there is little evidence of regressing in moral development. It also postulates that one cannot give or understand a moral reason that is beyond one's moral, cognitive capacity. For example, one cannot

talk to a two year old child about the social utility of not stealing a cookie; he simply will not understand a reason that complex. The focus in moral development is on the decision making process not just the outcome (Personal communication, Albert Pierce, 2005).

1. Kholberg's Theory

Moral development theory is associated with the most widely cited developmental psychologist, Lawrence Kohlberg. Kohlberg developed the theory that individuals, regardless of race, culture, or gender, progress in moral reasoning through six distinct stages of moral development. In his model there are three levels of development; preconventional, conventional, and postconventional, that each contain two stages. Kohlberg's Stages of Moral Development are nicely summarized in Figure 1 (Magun-Jackson, 2004):

Moral Stage	Meaning
Level I: Preconventional (4-12 yrs.)	Individual a selfish actor
Stage 1: Obedience and Punishment	Individual does what is expected to avoid punishment (pain).
Stage 2: Individualism, Instrumentalism, and Exchange.	Individual promotes self-interest by making deals, and a deal is a deal.
Level II: Conventional (most adolescents and adults).	Individual is concerned with being a member of society and/or group.
Stage 3: Mutual Interpersonal Expectations, Relationships and Conformity (peer approval).	Individual is concerned with living up to others expectations-good girl/good boy.
Stage 4: Social System and Conscience Maintenance.	Individual is concerned with law and order.
Level III: Postconventional (minimum age is late 20's).	Individual is concerned with societal issues.
Stage 5: Social Contract and Individual Rights, democratic process.	Individual is concerned with utilitarianism-provide the greatest good for the greatest number.
Stage 6: Universal Ethical Principles (most adults never reach this).	Individual is concerned with universal principles of conscience.

Figure 1.   Kohlberg's Six Stages of Moral Development

7

As recently as 2002, Kohlberg's stage theory was revisited which confirmed the results reported in previous research regarding ordered moral stages and their relationship to age, education and sex (Dawson, 2002). The study states that age and education are strongly correlated to moral stages which provide strong support for the sequentiality of moral judgment stages as well as support for the notion that stages are structured wholes, or coherent systems of thought (Dawson, 2002). Kohlberg developed the Moral Judgment Interview (MJI) as an assessment tool which uses dilemmas to assess moral judgment.

The MJI requires that those administering the test have some training to enable them to utilize it adequately because the test involves tape-recorded responses to hypothetical moral dilemmas. It also requires that the subject is able to explain his/her moral reasoning logically and coherently.

2.   Rest's Theory of Moral Development

Rest, a first generation student of Kohlberg, also confirmed the validity of developmental, self-constructed moral knowledge and acknowledged the central role of cognition in this conception (Thoma, 2002). Rest, however, developed a theory of moral development that diverged from Kohlberg's in some significant ways. Rest's focus turned toward developing a methodology that conformed to a cognitive developmental model, but minimized the practical and empirical concerns associated with Kohlberg's system (Thoma, 2002).

Rest developed the Defining Issues Test (DIT) which is based on Kohlberg's work, but defined the stages and sequence of moral development differently than Kohlberg's Stages of Moral Development. It is self-administered and subjects are presented with short vignettes or dilemmas then asked to select their answers on a multiple-choice basis. Both the DIT and Kohlberg's MJI method focused on moral dilemmas (some are identical). The DIT is assessed using a two-phase objective system. In phase I, the subject rates 12 items per story on a 5-point importance scale (a majority of these items are keyed to Kohlberg's stages). In phase II, items and ratings are again considered in order to select the four issues that best represent the respondent's rationale for a solution to the dilemma (Thoma, 2002).

Eventually, Rest expanded Kohlberg's theory to incorporate a Four Component Model (FCM) of Morality. Component 1 is Ethical Sensitivity: is the identification of the ethical aspects of a situation. Component 2 is Moral Judgment: is formulating which of the available actions are most justified through moral reasoning. Component 3 is Moral Motivation: involves prioritizing the moral concern over other significant concerns, it entails having the necessary motive (intent) or will to act in an ethical manner. Component 4 is Moral Character: requires an ability to construct and implement actions that service the moral choice or what ought to be done (Sirin, 2003). This idea of Moral Character is expressed by Dr. Kidder, Founder of The Institute for Global Ethics, as "Moral Courage." In this regard, he stated that, "Moral Courage

takes decisions and turns them into Action. Ethics without moral courage just sits there" (Personal communication, Rushworth Kidder, April, 2006).

3.   Challenges to Kohlberg and Rest

Although the work of Kohlberg and Rest serve as the foundation of almost all moral development theories, Kohlberg himself points out as recently as 1990 that even when operating at the sixth and highest stage of moral thinking, one cannot find the answer to certain ultimate questions such as "why be moral?" (Nidich, Nidich, & Alexander, 2005). Kohlberg himself emphasizes that his six stages of moral development offer an imperfect resolution of the problem of life's meaning, and suggests that there are questions that cannot be answered on a purely logical or rational ground. Solutions to these questions, according to Kohlberg, appear to rely upon a sense of being part of a cosmic perspective (a possible Stage-7 of Moral Development), as opposed to a universal humanistic (Stage-6) perspective (Nidich, 2005). Nidich explains this theoretical Stage-7 as experiencing the "self" as the home of all laws of nature.

Other limits to Kohlberg's six stages focus on the aspect of moral development versus ethical behavior. Kohlberg, like Kant before him, defined the moral domain so narrowly that only moral judgments concerning interpersonal justice and rights were included, while moral actions, emotions, and personality all fell outside of the realm of study (Christopher, Manaster, Campbell, & Winfield, 2002).

Kohlberg's model entails an understanding of the self as ethically related to others only through impersonal moral rules and principles.

In contrast, peak experiences and social interest entail a transformation of identity in which the self identifies with others (Christopher et al. 2002). Christopher concludes his exploratory study by suggesting the need to behaviorally assess moral development and social interests by looking at rates of such things as volunteering, contribution to philanthropies and charities, and the like.

Other criticisms focus on gender bias, particularly in regards to Kohlberg's six stages of moral development. A historical consensus exists that women typically think differently than men. Scholars have suggested that women's thinking tends to be more personal, emotional, and less abstract than men. Examples include Aristotle, Kant, Rousseau, Freud, and Lawrence Kohlberg (Simson, 2005). Many female scholars accept the notion that women tend to think differently from men but deny this tendency makes women less suited for intellectual work.

Embracing feminine thinking as distinct from male thinking has become very controversial and some have challenged the basic notion altogether. Among contemporary scholars who do distinguish between feminine and masculine tendencies in cognition, there is disagreement concerning the fundamental gender differences. Simson (2005) compiles a fair representation of the characteristic differences generally accepted between masculine and feminine thinking: Masculine thinking tends to be more abstract and concerned with generalizations.

11

Feminine thinking tends to be more concerned with particulars, multiplicity of variables, and context-dependent factors. Females tend to focus on dichotomies less than males, perceiving instead a plethora of middle positions and thus women are more tolerant of diverse viewpoints. Males tend to be more competitive and hierarchical, placing greater emphasis on individual autonomy. Women are more relational and cooperative. Finally, males strive to be unattached and unsentimental, whereas women tend to be more personal, blending the boundaries between emotions and rationality.

Care based ethics developed as an alternative account to Kohlberg's ethics of justice. This came about during a study when Carol Gilligan, a student of Kohlberg, questioned the validity of Kohlberg's claim that his conception of justice had universal validity. She did so based on an argument of gender bias. Kohlberg rated the reasoning of men and women as two different competence stages of ethical judgment, where female responses tended to be reflective of Stage 3, while male responses were reflective of Stage 4 of justice ethics. Gilligan demonstrated that Kohlberg's justice interpretation came from a sample consisting exclusively of boys. The absence of female subjects suggested the concept of justice rested on a gender bias (Schwickert, 2005). Gilligan then confirmed a hypothesis that the judgments of women are predominantly oriented toward the value of Care and the judgments of men predominantly toward the value of Justice (Schwickert, 2005).

Others agree that differences in moral reasoning are due to differences in the self-concept, with women feeling

connected to others using a care approach, whereas men feel separate and adopt a justice approach (Ryan, David, & Reynolds, 2004). However, current research suggests that it is the nature of the self-other relationship rather than gender per se that predicts moral development. The care-based approach is more likely to be utilized when interacting with a friend or when one views others as in-group verses out-group. Studies suggest that both the self-concept and moral reasoning are better conceptualized as fluid and context dependent, and that moral reasoning is dependent upon the social distance between self and others (Ryan et al., 2004).

This contextual concept could help to explain reasoning style. According to Mathes (2004), the majority of nurses (the one professional group traditionally associated with care) embraced a more principled, rule-based, justice orientation to moral decision making. Mathes suggests that a lack of professional autonomy, professionalizing nursing to a role of expert technician, and application of objective rules, are three reasons for the lack of care based reasoning in nursing (Mathes, 2004). All of these reasons support a sense of depersonalizing nursing which supports contextually dependent moral reasoning based on the social distance between the self and the other.

Finally, because the Kohlberg and Rest models require the construct of "reasoning" as a significant component to measuring moral development, it seems reasonable to consider whether "intelligence" would also correlate, in other words: whether these models are actually just another way of measuring intelligence or if they stand on their

own.   Cohn and Westenbeg (2004) detailed much of the
thought behind such speculation, and then examined whether
the measure of personality or ego development is equivalent
to the measurement of intelligence.

Cohn and Westenbeg (2004) concluded that 94% of the
tests revealed significant relations between ego level and
criterion variables after controlling for intelligence,
indicating that ego development and intelligence are not
interchangeable constructs.   Therefore these findings do
not support recent speculations concerning the limited
value of stage model maturity, social development, and
moral reasoning.

C.   TEACHING ETHICS AND MORAL DEVELOPMENT

With a basic and foundational understanding of moral
development, its historical evolution, predominant theories
and challenges established, the next, and logical question
is; so what?   Recalling the United States Naval Academy's
stated mission: "To develop midshipmen morally, mentally
and physically and to imbue them with the highest ideals of
duty, honor and loyalty..." (USNA, 2002, ¶ 1), it becomes
important to consider whether it is even possible to
intentionally and systematically develop someone morally.

Learning   from   studies   that   examined   delinquent
behavior in adolescents, we discover some interesting
findings. Delinquents are alleged to function at Kohlberg
Stage 1 or 2, while non-delinquents function at stage 3 or
4 (Leenders & Brugman, 2005).   In their research, Leenders
and Brugman hypothesize that although moral judgment
underlies moral action, things are more complex. Several
studies show that moral judgment competence is not a

14

powerful predictor of norm-transgressive behavior. Self-serving cognitive distortions and moral self-relevance were better predictors than moral judgment competence. For example; because moral transgressions are considered to be more serious than non-moral transgressions, it is less damaging to ones self-esteem if one's own moral transgressions are interpreted as non-moral. This is called a 'domain shift' and could be a way of reducing cognitive dissonance: an uncomfortable inner state that results from inconsistencies in a person's actions, beliefs, attitudes or feelings (Leenders, 2005).

Moral judgment competence does not provide a strong contribution to the explanation of delinquent behavior in adolescence however, the prevalence of delinquent behavior in the peer group and the attitude towards delinquent behavior, is substantial. Delinquency has a reputational and social identity function, and therefore is more a characteristic feature of the peer group than the individual. While mild forms of delinquency are normal, with males accounting for double the incidents compared to females, most are committed visibly for, and in the company of peers.

The implication is that when regarding methods of intervention, it is doubtful that merely increasing ones moral reasoning will lead to success in increasing moral decision making. Rather, interventions at the peer/group level could be more helpful (Leenders, 2005). The idea of social identity implies an awareness of self identity. Hardy and Carlo (2005) seem to have found that connections do exist between self and morality. Instead of focusing on moral reasoning his study examined identity as an important

15

source of moral motivation (a sense of self concerning moral issues). Kohlberg would say that as one's moral reasoning develops, the individual becomes more prone to utilize moral principles in making judgments. At higher stages of moral development, moral principles become more salient, resulting in the individual feeling more compelled to behave consistent with his/her moral judgments. However, evidence suggests that individuals highly committed to moral causes seem to experience a sort of unity between their self and moral goals, tending to use moral terms to describe their self more than other individuals. Additionally, the more individuals see moral virtues and values as important to their sense of self, the more likely they are to engage in moral behavior (Hardy & Carlo, 2005).

Regarding self identity and peer group influence, Brugman and Aleva (2004) find that improving the "perception" of the institutional moral atmosphere in schools and prisons is more likely to reduce antisocial behavior vice improving moral competence (Brugman & Aleva, 2004). Studies have found lower moral competence in delinquents, but are not clear weather low moral competence is a cause of delinquency, or a consequence of it, or both. This raises a question concerning moral development as a function of education, or a function of moral atmosphere? Brugman and Aleva (2004) state that there is no evidence of one's atmosphere influencing ones moral competence, but that it is a predictor of misbehavior or antisocial behavior. They also find that most juvenile crime is committed in the context of a group, and state that developing a positive peer culture is an important key for

16

a successful rehab program for juvenile delinquents (Brugman & Aleva, 2004). Although the influence of the moral atmosphere and peer group show up again, Brugman and Aleva point out that Kohlberg himself affirmed that both moral competence and contextual moral atmosphere are important for predicting behavior.

Although research supports the assertion of the social atmosphere and culture one is immersed in influencing moral development, Krettenauer (Krettenauer, 2004) found significant differences in meta-ethical cognition between high school students and an expert group of university students with special training in moral philosophy. This supports the finding in his research that epistemic reasoning (moral reasoning) develops with age and education.

These results suggest that the development of metaethical cognition (the study of meaning and nature of ethical terms, judgments, and arguments) can indeed be considered as a structural analogue of epistemic development with regard to factual knowledge (Krettenauer, 2004). In other words, an increase in moral reasoning (development) is analogous with an increase in knowledge (cognition). Supporting this finding, a study on the moral development of journalists found that journalists rank very high regarding ethical and moral judgment compared with other professions, but more interesting is that the small category of people who rank higher than journalists all have more education (Coleman, 2004).

Further support for the function of ethics education is found in a study concerning the effects of business ethics training by Fraedrich (Fraedrich, Cherry, King, &

Guo, 2005). In this study, student samples in various business courses were used to investigate whether general business training and ethics instruction affect students' ethical decision making and moral development. This study found support for the hypothesis that ethics education has an effect on the cognitive moral development of students, as well as having an effect on ones honesty. The study found some support for ethics education effecting ethical judgment, as well as a shift in values after ethics instruction, but found no support that ethics education has an effect on ones moral philosophy. These results suggest ethics training makes a difference on ethical reasoning (Colemand, & Wilkins, 2004, & Fraedrich et al., 2005).

D.   REFLECTIONS ON MORAL DEVELOPMENT LITERATURE

It appears there are multiple theories concerning moral behavior as it correlates to moral development, and if moral behavior is a function of moral education, self identity, or moral atmosphere. Although delinquent or morally questionable behavior occurs at the academy, the real question concerning moral behavior is; does this speak to the rigorous screening process by the admissions department, the institutionalized high moral standards in regard to moral atmosphere, or the leadership and ethics education in the curriculum at the Naval Academy.

For the remainder of this literature review, I make an a priori assumption that the research supporting the utility of ethical and moral education is valid. This is not an objection to arguments that variables like institutional culture and self identity also influence moral development, but is rather an acknowledgement that in

light of the multiple variables that could influence ethical and moral development, education will be recognized as one of many valid variables.

With this acknowledgement, research bearing on the question of how to teach ethics and morals will be reviewed. Penn State for example, has been developing ways to teach engineering students about ethics by developing students' understanding of ethical frameworks, developing ethical problem-solving skills, and developing a better understanding of the professional responsibilities of engineers (Lau, 2004). The learning objective in this curriculum is the development of moral imagination (similar to the development of technical imagination in engineering design courses). Making sound arguments is also addressed in the process of reasoning through cases, and critiquing other's arguments. Here they emphasize the difference between minimalist ethics: what not to do, as in the ten-commandments, vice maximalist ethics: making the most of one's life from the standpoint of doing good in the world. However, no formal assessment has been done of this course regarding its teaching effectiveness (Lau, 2004).

Mangun-Jackson (2004) reviewed recent research indicating great diversity in the way institutions approach the problem of teaching ethics to undergraduate engineering students. Some schools require students to take general ethics courses based on philosophical or religious perspectives, while others integrate ethics into existing engineering courses (Magun-Jackson, 2004). Mangun-Jackson proposed a method of integrating ethics into engineering education that is based on Kohlberg's stage theory of moral development.

19

Boland-Prom and Anderson (2005) found that in regard to teaching ethics to social workers, current educational materials do not move sufficiently beyond a risk-reduction approach to dual relationships, suggesting an improvement would be to teach students how a dual relationship can be assessed and ethically maintained. Challenging social work educators on how best to teach students effective ethical problem-solving skills, this study discusses two approaches.

The first approach is the Process Method, which deals with clinical and ethical issues as inseparable (a broad sense based on core values and basic ethics principles). The second approach is the Technical Method, which views ethics as technical and complex, requiring specific training on how to recognize and solve ethical dilemmas inherent in social work (uses specifics from the ethics code as a standard for analyzing a case). Boland-Prom and Anderson concludes that a comprehensive approach would include both approaches (Boland-Prom & Anderson, 2005).

In the healthcare practices, the Hippocratic ethical principles are being challenged as insufficiently adequate in addressing an increasing range of problems and situations in health care (Hattab, 2004). Hattab concludes that both theoretical foundations and practical skills are required for appropriate ethical reasoning, attitude and decision-making abilities. Hattab sites growing evidence that physicians' professional and moral development is determined by the formal curriculum of ethics as well as the moral environment of the professional practice. Medical ethics education has become a standard component of

undergraduate and graduate medial training. The teaching methods include: lectures, seminars, group discussions, and group projects (Hattab, 2004).

Piper acknowledges that moral education faces a number of well-recognized challenges. He suggests a dialogical model of moral education that supports the idea of engaging students in activities in which they are encouraged to monitor their own thoughts, feelings, and actions (Piper, 2004).

Concerning the profession of arms, and returning to the mission of the USNA in regards to developing midshipmen morally, justification for moral development programs is sometimes overlooked. In this regard we need look no further than a previous study that examined the effects of multicultural and ethics courses on ethical sensitivity. This study described the development of a computerized version of a measure of ethical sensitivity to racial and gender intolerance called the Racial Ethical Sensitivity Test (REST) (Sirin, Brabeck, Santiani, & Rogers-Serin, 2003). The study found that students with multicultural and ethics course experience, score significantly higher on the REST-CD (better in regard to racial and ethical sensitivity) than students without multicultural and ethics course work. Ethical sensitivity to racial and gender intolerance in schools, as measured by the REST-CD was moderately related to attitudes toward racial and gender equity issues in society.

Interestingly, the study found that cultural competence is a requirement for ethical practice. Sirin and others (2003) suggest that professionals should be competent in Racial and Ethical Sensitivity materials and

if not, it is reasonable to argue that they are not living up to their professional duty. Describing ethical and moral development as a professional concern rather than personal concern, Sirin's research rightly suggests, therefore, that professionals can be held accountable for their behavior, and training programs can be held accountable for training competent professionals (Sirin et al., 2003).

E.   GENESIS OF THE ETHICAL DECISION MAKING INSTRUMENT

Before an institution can tackle the responsibility of creating an accountable ethics curriculum, the issue of determining if moral development is in fact taking place must be addressed.   In this regard, the USNA Ethics Department embarked upon a thorough assessment of existing ethical and character development assessment instruments. The remainder of this literature review will draw heavily upon two United States Naval Academy documents put forth by the Ethics Department in the pursuit of evaluating existing measures and creating an assessment instrument appropriate for the Naval Academy's purposes.   The first document is the "Ethics and Character Development Assessment Process Results of Phase I: Conceptual Overview" (a.k.a. "The White Paper") (Pierce, 2003).   The second document is the follow up to the White Paper called the "Report of the Working-Group on Instrument Evaluation" Captain Elizabeth Holmes, Chair.   It was originally published on January 23, 2003, and later modified and appended on June 5, 2003.

"The White Paper," as it is called, addressed numerous concerns and provided the conceptual guidance to those who were embarking on creating a measurement tool to measure "ethics and character development" of midshipman (Pierce,

22

2003). The White Paper addressed definitions of ethics (or, morals), character and development, stating that "ethics" refers to specific knowledge, skills and behaviors. "Character" indicates personal virtues, beliefs, and attributes, and "development" is employed to recognize that midshipmen should mature in the areas of ethics and character over time. "Assessment" describes an ongoing management process by which goals are set in concurrence with the Naval Academy's stated mission, including the attainment of empirical information in the aspirations of attaining such goals (Pierce, 2003).

Naval Academy faculty and staff conducted a semester long series of roundtable discussion in order to address several major questions:

1. What do we know about incoming midshipmen that is relevant to ethics and character?

2. When we say that our goal is to produce officers of character, what do we mean?

3. What does moral development theory tell us about how the major USNA ethics and character programs might best contribute to turning the incoming midshipmen into the kinds of officers we want to produce?

Answering the first question, the roundtable concluded that the students at the Naval Academy both are, and are not, a cross-section of American youth. They are not a normal cross-section for two reasons. First, Naval Academy recruiting material makes clear that honor, character, values, and ethics constitute a defining element of the Naval Academy experience. Therefore, they have self-selected this kind of experience and commitment. Second,

the Naval Academy then selects from among those who have self-selected a lifestyle committed to honor, character, values, and ethics (Pierce, 2003).

In addition to developing Midshipmen morally, the mission of the USNA further states that their graduates should be courageous leaders who take responsibility for their personal and professional decisions and actions; role models of ethical behavior and moral conduct; and, leaders who recognize and value individual excellence regardless of gender or cultural and ethnic background.

The White Paper attempts to provide measurable descriptions of ascertainable goals, and stipulates that the person be fully developed morally. The midshipman must have well-developed knowledge, abilities, and values in these five measurable areas, moral awareness, moral reasoning, moral courage or "strength," specific virtues and characteristics, and moral effectiveness.

A summarized version of how "The White Paper" defines these five measurable areas as moral awareness, moral reasoning, moral courage, specific virtues, and moral effectiveness.

1. Moral Awareness

Moral awareness is the ability to recognize when a problem is not merely a narrow, technical dilemma, but rather is one with richer moral content that involves dimensions of right and wrong which must be addressed in addition to its technical components. It includes knowing the moral dimensions of a problem, recognizing these dimensions, and accepting the value of a moral obligation.

Moral awareness also includes the ability to empathize with another moral agent and his or her position.

2. Moral Reasoning

Moral reasoning is the ability to work through a logical and objective process for determining and distinguishing right from wrong. Critical thinking and logic skills are needed not only for the "right vs. wrong" cases, but also for the "right vs. right" case. Moral reasoning should go beyond a rational capacity to "weigh the consequences" and involves a systematic process for evaluating other factors, such as rights, duties, laws, and human interests (social values).

3. Moral Courage

Moral courage (strength) is the willingness and desire of an individual resulting in the execution of what he or she has determined, either through knowledge, instinct and/or reasoning, is "the right thing to do", regardless of difficulty. Neither extensive knowledge of right and wrong nor the most sophisticated moral reasoning skills will necessarily lead to moral behavior. The measure of a midshipman's moral courage / strength can be ascertained by observing behavior patterns of midshipmen and officers over the course of their careers.

4. Specific Virtues

The Academy seeks to foster in individuals not just ethical knowledge, skills and behaviors, but certain essential personal characteristics. These include, but are not limited to, the naval core values of honor (honesty, integrity, and responsibility), courage (loyalty,

patriotism, and valor), and commitment (competence, teamwork, and respect), as well as empathy, civility and humility (specifically, the opposite of arrogance). It is not clear if human virtues are measurable in a traditional, empirical sense, however a Midshipman should be able to demonstrate coherence between personal stated virtues and individual behavior.

5.   Moral Effectiveness

Moral effectiveness is the comprehensive ability to bring together all of one's knowledge, skills, and values in order to accomplish the intended action. It may be that a person has moral awareness, moral reasoning, and moral courage, but lacks the interpersonal skills or maturity of judgment to effectively act, successfully carrying out an action appropriate to the specific context.   Further, the Naval Academy "White Paper" states:

> For those who must make decisions and choices ---
> and then take action --- in peacetime and in war,
> being an "officer of character" requires all four
> dimensions --- moral awareness, moral reasoning,
> moral courage, and moral effectiveness (Pierce,
> 2003).

The White Paper explicitly acknowledges that leadership is a developmental process, and that Midshipmen develop morally over time, just as they do physically, mentally, and emotionally.   Therefore the assessment process must identify the five measurable criterions (awareness, reasoning, courage, virtues, effectiveness) at different developmental levels, as a way of measuring the progress of a midshipman over time and experience.

The White Paper also states that character and ethics programs should provide a healthy and balanced mix of

opportunities for the midshipmen to practice living self-awareness, self-reflection, and self-criticism which are instrumental components of moral development, but clearly states that these are means, not ends.

> Our assessment process should also determine if these foundational skills are being taught in our ethics and character related programs and the impact these skills have on the development of midshipmen (Pierce, 2003).

The White Paper clarifies the current philosophy at the Naval Academy in regards to moral development where it is acknowledged that no one program can contribute to all aspects of this complex developmental process. This is expressed best in the "ethics across the curriculum" concept at the Naval Academy, where some of the programs are intellectual (ethics and leadership curriculum), and other non-academic programs are more experiential than academic (athletics, military leadership programs, spiritual and religious programs, the Honor Concept, etc.).

Clarifying which programs can best contribute to development of moral awareness, reasoning, courage, and effectiveness is also identified as an essential future step in the assessment process (Pierce, 2003). With the development of these fundamentals established, the Ethics Department at the Naval Academy then began an exhaustive research project to identify or develop, and validate an instrument that would most accurately measure the concepts discussed in the White Paper. This research is outlined in the second document which is the follow up to the White Paper called the "Report of the Working-Group on Instrument Evaluation".

27

The following is taken directly from the report and establishes the acceptance of a Canadian model for pilot use at the Naval Academy:

> This working-group prefers the Canadian Defense Force Exams instrument favorably to the Ethics and Character Assessment Steering Committee. We would like to see the Steering Committee support the implementation of this instrument.
>
> Recommendation Two/A: The Naval Academy should work with this instrument's authors to modify, tweak and use the assessment tool in a pilot / beta test. The Canadian Defense Force instrument appears to us to have greater reliability, validity and potential usefulness than any other measure evaluated by this working-group (Holmes, 2003).

F. CHAPTER SUMMARY

In this chapter, I have reviewed the United States Naval Academy mission: "To develop midshipmen morally, mentally and physically…" as well as a basic history of moral development theory, including a review of many of the difficulties associated with moral development theory. A review of some theories on moral development education was included, along with the genesis for and development of the Ethical Decision Making Instrument at the United States Naval Academy.

III. RESEARCH METHODOLOGY

A.   INTRODUCTION

In the last chapter, I reviewed the specific portion of the United States Naval Academy's mission that focused on developing midshipmen "morally." In addition I outlined a basic history of moral development theory, including a review of many of the difficulties associated with moral development theory and moral development education. Finally, a discussion reviewing the genesis for and development of the United States Naval Academy's Ethical Decision Making Instrument (EDMI), which was based on the Canadian developed "Defence Ethics Survey," was also reviewed. In this chapter, I will specifically describe the administration of the instrument and the collection protocols involved. Also, the variables included in the EDMI itself and what these variables are designed to measure, as well as how these data are organized and presented in the study. I will also describe the methods and statistical techniques used to analyze the data.

B.   EDMI INSTRUMENT

The Ethical Decision Making Instrument is designed to combine numerous theories on moral development into one assessable instrument. It takes into account philosophy based theories on moral development (Part-I), as well as moral stage development and intensity theories (Part-II). The instrument, which in essence is a survey, is designed for easy administration. The instrument requires a pencil to fill in appropriate responses based on various Likert-

29

type scales. On average, it takes approximately 35 minuets for the subject to complete and is made up of two parts:

1.   EDMI Part-I

Part-I is based on moral philosophy and consists of 23 items which are designed to categorize the subject's general beliefs into one of seven moral philosophies. The Canadian model has six: Care, Virtue, Rules, Consequence, Self-interest, and Multiple-approach. The Naval Academy added Faith as an additional possible philosophy-based stance. After each of the twenty-three statements, the subjects are asked to indicate the extent of their agreement or disagreement with each statement using a 5-point Likert-type scale. The five possibilities are; Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. Part-I of the EDMI is not within the scope of this thesis and is only described for the purpose of accurately describing the instrument in its entirety, and is provided for review in Appendix A.

2.   EDMI Part-II

Part-II of the EDMI is a scenario-based instrument which is foundationally based on Rest's Moral Judgment Test, and Jones' Contingency Issue Model. While the Canadian model has four scenarios, Part-II of the EDMI incorporates five scenarios that were re-written in order to be relevant to the life of a Midshipman.

Each of the five scenarios increase in complexity and intensity, are written in a gender neutral format, and provides the action/decision taken by the scenario's characters. This was designed to reduce gender bias, and

the potential for a social desirability response bias (Dursun, Morrow, & Beauchamp, 2004).

The five scenarios present ethical dilemmas with the intent of stimulating the subject's ethical perception, judgment, and intention based on the decision made by the character in the scenario. The five scenarios are provided for reference in Appendix B.

The EDMI instrument incorporates into its structure Jones' theory which postulates that the intensity of the situation should influence each stage of the decision making process. Following the Canadian model, the EDMI assesses five of the six moral intensity dimensions: magnitude of consequences, temporal immediacy, social consensus, proximity, and probability of effect.

a.   *Magnitude of Consequences*

This construct refers to the sum of harms resulting from the action/decision taken in the scenario (Dursun et al., 2004).

b.   *Temporal Immediacy*

This construct refers to the time between cause and effect. The closer the effect is to the present time, the more intense the situation (Dursun et al. 2004).

c.   *Social Consensus*

This construct refers to the perceived social agreement regarding an ethical issue.

d.   *Proximity*

This construct measures the closeness that the subject feels to the effected characters in the scenario.

Proximity has a social, cultural, psychological and physical aspect (Dursun et al., 2004).

e. *Probability of Effect*

In the context of this test Probability of Effect refers to the perceived probability that the subject feels the action/decision taken will have negative consequences (Dursun et al., 2004). As with the Canadian model, the EDMI leaves out the sixth dimension (concentration of effect), due to previous studies that found little support for this dimension of moral intensity (Dursun et al., 2004).

In addition to the intensity dimensions, the EDMI also incorporates a moral decision making assessment based on Rest's theory. According to Rest The decision making process consists of four components. These dimensions are: recognizing a moral issue, making a moral judgment, forming a moral intent, and behaving in an ethical manner. The EDMI attempts to assess the first three of these four constructs, since the last dimension cannot be assessed by a survey of this type.

The component "Recognizing a Moral Issue" refers to the ability of the subject to recognize that the scenario is presenting a moral issue of some degree. Regarding the component "Making a Moral Judgment" the EDMI attempts to determine the subjects' capacity to make judgments which are moral. The construct of "Forming a Moral Intent" attempts to assess the subjects' intent to take action based upon ones moral judgment.

Following each scenario the EDMI attempts to capture the subjects' stance on the first three components only since actual behavior cannot be measured in

hypothetical scenarios. It does this by asking specific questions related to each of the first three constructs.

Each question the subjects are asked solicits a response on an individualized 7-point, Likert-scale. With the exception of determining "moral judgment" which utilizes eight factors for the subject to rate, there is one question for each of the constructs. Part II questions are the same for each scenario and are listed for reference along with which construct they are measuring in Appendix C.

Part I of the EDMI (philosophy based reasoning), as well as the eight factor portion of Part II that measures moral judgment, will not be studied in this thesis. These portions of the EDMI are the subject of other studies being conducted by the ethics department. This study will cover in some detail: the five contingency issue intensity dimensions (Questions 1-5), moral recognition (Question 7), and moral intent (Question 8).

C.   VARIABLES/DATA DESCRIPTION

Data for this project were obtained from The Office of Institutional Research, Planning, and Assessment (IR) at the Naval Academy. Data were taken from Midshipmen records in the IR data warehouse from the Classes of 2006 to 2009. The EDMI was administered to a random sample of Midshipmen in November, 2005. This random sample comprised of 1,751 midshipmen. Of the 1,751 surveys administered, 812 were deemed usable due to strict survey protocols based on completeness of the survey. The general descriptive statistics of the survey are presented here in Table 1.

Table 1.   General Description of Survey Data

Brigade Total			Survey Sample			Usable Sample		
Class	Frequency	%	Class	Frequency	%	Class	Frequency	%
2006	1005	23	2006	402	23	2006	153	18.8
2007	1037	23.7	2007	436	24.9	2007	219	27
2008	1154	26.4	2008	438	25	2008	236	29.1
2009	1176	26.9	2009	475	27.1	2009	204	25.1
Total	4372	100	Total	1751	100	Total	812	100
Male	3610	82.6	Male	1455	83.1	Male	644	79.3
Female	762	17.4	Female	296	16.9	Female	168	20.7
Total	4372	100	Total	1751	100	Total	812	100

The data presentation are organized by scenario beginning with Scenario 1 (S1), and ending with Scenario 5 (S5). Within each scenario the questions are organized as follows: Questions 1-5 (Q1-Q5) are the five contingency issue related questions. Questions 7 and 8 (Q7, Q8) refer to moral recognition and moral intent.

For each question of each scenario these data are presented by class and by gender. For the study and organization of data, Men are given the value 0, and women are given the value 1. At the time this survey was given to the Brigade of Midshipman in 2005, the class breakdown was as follows: The Class of 2006 is the senior class, known at the Academy as the 1st class. The Class of 2007 is the junior class, or 2nd class. The Class of 2008 is the sophomore class, or the 3rd class. Finally, the Class of 2009 is the freshman class or the 4th class (they are also known as Plebes at the Academy).

All descriptive statistics tables are provided in Appendix D, Tables 22-26 for reference. The descriptive statistics are presented by scenario, then for each scenario are broken down by question, by year group, and

34

finally by gender. The descriptive statistics specifically display the number of samples in each year group (n), the mean, the standard deviation, and standard error. Totals are provided for reference. Although descriptive statistics cannot predict, prove, test assumptions, or establish relationships, we can get a feel for the data in its environment.

To note, the grad year is broken into class 2006 to 2009. It is important to understand that these grad years are analogous with class year. To be clear, the Class of 2009, at the time the survey was given, were freshmen or "Plebes" as they are called at the Naval Academy. Likewise, at the time of the survey, the 2006 class was the senior class or "First Class" as they are called at the Naval Academy. Also of note is that the usable sample size for the Class of 2006 was in the 150's, compared to the other classes averaging in the low 200's, is consistent with attrition rates over four years at the Academy.

In regard to gender, it is apparent that the random sample of Midshipman generally followed population norms, as women represent approximately 17% of the Brigade of Midshipman. Of the 812 subjects, 644 are male, representing a reasonable 20/80 male/female distribution. Also, every question studied is valued on a seven point, Likert-type scale where the minimum value is 1, and the maximum value is 7. When considering normally distributed data, this limits the extremeness that outlying data points can have on the within-group distribution.

D.   METHODOLOGY

Two questions were addressed in this study. The first question involved determining if there is a difference in moral thinking between year groups at the Naval Academy. The second question is whether men and women indeed think differently in regards to moral issues and decision making. This was accomplished by applying the principles of population mean testing to null hypotheses.

In order to answer the first question, the way in which the Midshipman answered the questions to the scenarios by class from 2009 (freshman) to 2006 (seniors) were compared. This provided a snapshot of views over time, which if significant differences existed, were extrapolated to mean either moral development or moral regression. To answer this question the stated null hypothesis was that there is no difference in the way year groups answered the questions on the EDMI. Significant differences require a rejection of the null, indicating moral development or moral regression over time.

The second question involved answering the question if men and women at the Academy think differently in regard to moral issues. In order to answer this second question I compared the way in which Midshipman answered the questions by gender were compared. The stated null hypothesis was that there is no difference in the way gender groups answer the questions on the EDMI. If significant differences are indicated, this will require a rejection of the null, indicating difference in moral thinking by gender.

1.   Class

The method utilized to answer question one was to apply the One-factor ANOVA comparing the difference in Classes 2006 – 2009 on EDMI results for questions 1-5, 7, and 8 for each Scenario (1-5). Second, a robust test for Equality of Means (EOM) was used to ensure accuracy of the ANOVA data. Finally, the analysis requesting multiple comparisons (post hoc), using LSD (least significant difference) test was used to identify specifically which, if any population groups differed. Each of these tests produced descriptions and summaries of the data for reference.

The method used to answer question two is straight forward. An independent T-Test was applied to determine mean differences by scenario, by question, for gender. Summaries of the data were produced for reference.

The null hypothesis for question one assumes the year groups have the same means. If true, a ratio of the two sources of variation (within-group and between-group) should be about 1 (no difference). When the groups are normally distributed: the statistical distribution is known and a probability statement can be made about the consistency of the data with the null. If there is a significantly small probability of finding differences (equal to the ones observed or larger) from a sample if the sample had no population differences, it would be concluded that the populations differ. This is indicated by a Significance of .05 or smaller. The goal was to determine if there were differences in the way Midshipmen responded to the EDMI by class (year group).

37

Most of the ANOVA is not directly interpretable. Summaries were used to obtain the F statistic and the probability value (significance). Sum of squares is shown because it is traditional to present the data but is not interpreted. The degrees of freedom (df) is related to the number of groups and number of individual observations within each group and is used to calculate between group and within group variation.

If the null hypothesis is not accepted, the F value would be close to 1.0. Conversely the greater the value of F, the greater the difference in population means. The significance value is the most readily interpretable and is usually the first value researchers review. This value provides the probability of obtaining a sample F ratio that is as large (or larger) than the F obtained. A significance value of .01 means that one in 100 samples would produce a value equal to or greater then the F. This means that a significance of .05 or smaller indicates that there is a statistically significant differences in population means.

To ensure there are no assumption violations, a robust test of Equality of Means was used to verify the statistical significance, since the ANOVA does not assume equality of means. If the ANOVA and test for EOM determined that differences in between-group means existed, than the null hypothesis was rejected, regarding that specific question, in that specific scenario. With a number of these difference concluded, the next question explored was to specifically identify which group means differed significantly from one another.

For this study, the least significant difference (LSD) method of post hoc or multiple comparison tests were used. This is a straightforward test that applies standard t-tests to all possible pairs of group means. Since a difference in group means has already been established at the .05 level, and backed up with the test of equality of means test, no additional controls are needed therefore the LSD test (the most liberal) was utilized. Although this could have increased the chance of a false positive, it is the test with the greatest statistical power.

With the LSD Post Hoc test, the significance is once again the important value. A value of .05 or lower identified the groups that were statistically different from each other. The accuracy was verified by the 95% confident interval. If no 0 existed between the upper and lower bounds, the mean difference was statistically significant.

2.   Gender

The method used to answer question two regarding gender is straightforward. The independent samples T-Tests were applied to determine mean differences for each scenario, comparing the means of men and women for each question. The summaries of the data are produced for reference.

The Independent Samples T-Test both assumes equal variance, and will not assume equal variance. If the Levenes test significance value is less than .05, I assumed equal variance. If the Levene's Test of Significance is greater than .05 equal cannot be assumed. As with the other tests the "significance" is once again the important

value. A value of .05 (Sig 2-Tailed) or lower identified the groups that were statistically different from each other. The accuracy was verified by the 95% confident interval. If no 0 existed between the upper and lower bounds, the mean difference was statistically significant.

E. CHAPTER SUMMARY

In summary, in determining if moral development is occurring at the United States Naval Academy three tests were used that compared population means: An Analysis of Variance (ANOVA), a robust test for Equality of Means (EOM), and a Least Significant Difference (LSD) method of Post Hoc or Multiple Comparison tests. In determining if there is a difference in the way men and women think about moral issues an Independent Samples T-Test was applied to compare population means of males and females.

IV. DATA ANALYSIS

A.   INTRODUCTION

In this chapter the data described in Chapter III were analyzed. The data analysis for the first null hypothesis (there is no difference in the way year groups answer the questions on the EDMI) is presented by displaying the results of the ANOVA, EOM, and Multiple Comparison Post Hoc tests for each scenario. The data analysis for the second null hypothesis (there is no difference in the way gender groups answer the questions on the EDMI) is presented by displaying the results of the Independent T-Test by scenario.

B.   CLASS DATA ANALYSIS

1.   Scenario-1: Class Data Analysis

In Scenario-1, the results of the ANOVA determined that four of the seven questions (Q1, Q3, Q5, Q7) have statistically significant population mean differences between groups. These are highlighted in bold font for quick reference in Table 2.

Table 2. Scenario-1 ANOVA

S1-Q1 MAGNITUDE OF CONSEQUENCES

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	20.48	3	6.83	3.34	**0.02**
Within Groups	1644.77	805	2.04		
Total	1665.25	808			

S1-Q2 TEMPORAL IMMEDIACY

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.79	3	0.60	0.24	0.87
Within Groups	1992.09	805	2.47		
Total	1993.89	808			

S1-Q3 SOCIAL CONSIENCE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	30.35	3	10.12	4.33	**0.00**
Within Groups	1885.88	807	2.34		
Total	1916.23	810			

S1-Q4 PROXIMITY

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.22	3	2.07	0.92	0.43
Within Groups	1820.77	804	2.26		
Total	1826.99	807			

S1-Q5 PROXIMITY OF EFFECT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	34.97	3	11.66	4.50	**0.00**
Within Groups	2085.54	805	2.59		
Total	2120.51	808			

S1-Q7 IDENTIFYING A MORAL ISSUE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	58.25	3	19.42	7.49	**0.00**
Within Groups	2083.68	804	2.59		
Total	2141.92	807			

S1-Q8 MORAL INTENTION

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.77	3	3.26	1.27	0.28
Within Groups	2049.08	801	2.56		
Total	2058.85	804			

The Brown-Forsythe and Welch test of equality of means verifies that without assuming homogeneity of variance, the differences in between-means exist for the same questions (Q1, Q3, Q5, Q7) as illustrated in Table 3.

Table 3.   Scenario-1, Robust Tests of Equality of Means

	Statistic(a)	df1	df2	Sig.
S1-Q1 MAGNITUDE OF CONSEQUENCES				
Welch	3.26	3	428.21	**0.02**
Brown-Forsythe	3.36	3	777.14	**0.02**
S1-Q2 TEMPORAL IMMEDIACY				
Welch	0.24	3	427.15	0.87
Brown-Forsythe	0.24	3	771.09	0.87
S1-Q3 SOCIAL CONSIENCE				
Welch	4.11	3	426.80	**0.01**
Brown-Forsythe	4.32	3	765.68	**0.00**
S1-Q4 PROXIMITY				
Welch	0.89	3	421.49	0.44
Brown-Forsythe	0.90	3	731.94	0.44
S1-Q5 PROXIMITY OF EFFECT				
Welch	4.18	3	424.56	**0.01**
Brown-Forsythe	4.47	3	754.02	**0.00**
S1-Q7 IDENTIFYING A MORAL ISSUE				
Welch	7.94	3	424.57	**0.00**
Brown-Forsythe	7.45	3	750.06	**0.00**
S1-Q8 MORAL INTENTION				
Welch	1.31	3	423.93	0.27
Brown-Forsythe	1.27	3	753.39	0.28

The multiple comparison test verifies the differences taking place within Q1, Q3, Q5 and Q7, but also specifically identifies that the Class of 2009 is responsible for the variation as shown in Table 4.

Table 4.   Scenario-1 Post Hoc, Multiple Comparisons Test

Dependent Variable	(I) Grad Year	(J) Grad Year	(I-J) Mean Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
S1-Q1 MAGNITUDE OF CONSEQUENCES							
	2009	2006	0.20	0.15	0.20	-0.10	0.50
		2007	0.32	0.14	0.02	0.05	0.59
		2008	0.41	0.14	0.00	0.14	0.68
S1-Q3 SOCIAL CONSIENCE							
	2009	2006	0.33	0.16	0.05	0.00	0.65
		2007	0.51	0.15	0.00	0.22	0.80
		2008	0.41	0.15	0.01	0.12	0.69
S1-Q5 PROXIMITY OF EFFECT							
	2009	2006	0.36	0.17	0.04	0.02	0.70
		2007	0.56	0.16	0.00	0.25	0.87
		2008	0.41	0.15	0.01	0.11	0.71
S1-Q7 IDENTIFYING A MORAL ISSUE							
	2009	2006	-0.73	0.17	0.00	-1.07	-0.39
		2007	-0.55	0.16	0.00	-0.86	-0.24
		2008	-0.57	0.15	0.00	-0.87	-0.27

2. Scenario-2: Class Data Analysis

In Scenario-2, the ANOVA has determined that two of the seven questions (Q7, Q8) have statistically significant population mean differences between groups. Question 3 (Q3) is close to the .05 standard (.07) and is highlighted for quick reference in Table 5.

Table 5.   Scenario-2 ANOVA

S2-Q1 MAGNITUDE OF CONSEQUENCES					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.58	3	2.19	1.05	0.37
Within Groups	1678.68	804	2.09		
Total	1685.27	807			
S2-Q2 TEMPORAL IMMEDIACY					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.86	3	3.95	1.39	0.24
Within Groups	2288.08	805	2.84		
Total	2299.94	808			
S2-Q3 SOCIAL CONSIENCE					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.54	3	4.18	2.33	**0.07**
Within Groups	1443.48	804	1.80		
Total	1456.02	807			
S2-Q4 PROXIMITY					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.64	3	1.88	0.70	0.55
Within Groups	2164.24	807	2.68		
Total	2169.88	810			
S2-Q5 PROXIMITY OF EFFECT					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.87	3	2.29	0.99	0.40
Within Groups	1862.80	803	2.32		
Total	1869.67	806			
S2-Q7 IDENTIFYING A MORAL ISSUE					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	37.47	3	12.49	4.56	**0.00**
Within Groups	2208.27	807	2.74		
Total	2245.74	810			
S2-Q8 MORAL INTENTION					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.33	3	5.78	3.02	**0.03**
Within Groups	1541.50	805	1.91		
Total	1558.84	808			

The Brown-Forsythe and Welch Test Of Equality of Means verifies that without assuming homogeneity of variance, the differences in between-means exist for the same questions (Q7 and Q8). Notice that the Welch test identifies Q-3 as statistically significant. The significance for Question 3 was 0.07, which is very close to the 0.05 criteria for significance. Table 6 summarizes the results.

Table 6.   Scenario-2 Robust Tests of Equality of Means

	Statistic(a)	df1	df2	Sig.
S2-Q1 MAGNITUDE OF CONSEQUENCES				
Welch	1.12	3	430.30	0.34
Brown-Forsythe	1.07	3	789.32	0.36
S2-Q2 TEMPORAL IMMEDIACY				
Welch	1.28	3	428.17	0.28
Brown-Forsythe	1.40	3	777.07	0.24
S2-Q3 SOCIAL CONSIENCE				
Welch	2.76	3	426.47	0.04
Brown-Forsythe	2.35	3	762.16	0.07
S2-Q4 PROXIMITY				
Welch	0.71	3	428.36	0.54
Brown-Forsythe	0.70	3	775.06	0.55
S2-Q5 PROXIMITY OF EFFECT				
Welch	0.96	3	428.54	0.41
Brown-Forsythe	1.00	3	783.57	0.39
S2-Q7 IDENTIFYING A MORAL ISSUE				
Welch	4.86	3	429.86	0.00
Brown-Forsythe	4.61	3	778.35	0.00
S2-Q8 MORAL INTENTION				
Welch	3.49	3	422.30	0.02
Brown-Forsythe	2.97	3	721.63	0.03

The multiple comparison tests verify the differences taking place within Q7 and Q8 compared to the ANOVA, and also with Q3 which was just outside the 0.05 criterion at 0.07 on the ANOVA. Also, the test again clearly and specifically identifies that the Class of 2009 is responsible for the variation. Table 7 illustrates the finings.

Table 7.   Scenario-2 Post Hoc, Multiple Comparisons Test

Dependent Variable	(I) Grad Year	(J) Grad Year	(I-J) Mean Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
S2-Q3 SOCIAL CONSIENCE							
	2009	2006	0.326	0.14	**0.02**	0.04	0.61
		2007	0.253	0.13	0.05	0.00	0.51
		2008	0.279	0.13	**0.03**	0.03	0.53
S2-Q7 IDENTIFYING A MORAL ISSUE							
	2009	2006	-0.466	0.18	**0.01**	-0.81	-0.12
		2007	-0.569	0.16	**0.00**	-0.89	-0.25
		2008	-0.331	0.16	**0.04**	-0.64	-0.02
S2-Q8 MORAL INTENTION							
	2009	2006	0.369	0.15	**0.01**	0.08	0.66
		2007	0.300	0.13	**0.03**	0.04	0.57
		2008	0.340	0.13	**0.01**	0.08	0.60

3.   Scenario-3: Class Data Analysis

In Scenario-3, the ANOVA has determined that three of the seven questions (Q2, Q7, and Q8) have statistically significant population mean differences between groups. Q1 is close at .09 as shown in Table 8.

Table 8.   Scenario-3 ANOVA

S3-Q1 MAGNITUDE OF CONSEQUENCES					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.85	3	6.28	2.19	**0.09**
Within Groups	2307.63	805	2.87		
Total	2326.48	808			
S3-Q2 TEMPORAL IMMEDIACY					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	29.89	3	9.96	3.71	**0.01**
Within Groups	2151.11	802	2.68		
Total	2181.00	805			
S3-Q3 SOCIAL CONSIENCE					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.24	3	2.08	1.18	0.32
Within Groups	1421.66	804	1.77		
Total	1427.90	807			
S3-Q4 PROXIMITY					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.58	3	1.86	0.88	0.45
Within Groups	1693.58	801	2.11		
Total	1699.16	804			
S3-Q5 PROXIMITY OF EFFECT					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.93	3	3.64	1.24	0.29
Within Groups	2336.39	797	2.93		
Total	2347.32	800			
S3-Q7 IDENTIFYING A MORAL ISSUE					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	19.51	3	6.50	2.65	**0.05**
Within Groups	1971.34	802	2.46		
Total	1990.85	805			
S3-Q8 MORAL INTENTION					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16.67	3	5.56	2.87	**0.04**
Within Groups	1557.80	803	1.94		
Total	1574.48	806			

The Brown-Forsythe and Welch Test of Equality of Means verifies that without assuming homogeneity of variance, the differences in between-means exist for the same questions (Q2, Q7, and Q8), and is significant with the Welch test (.05) and very close with Brown-Forsythe test for Q1 (.08) which shown in Table 9.

Table 9.   Scenario-3 Robust Tests of Equality of Means

	Statistic(a)	df1	df2	Sig.
S3-Q1 MAGNITUDE OF CONSEQUENCES				
Welch	2.56	3	432.41	0.05
Brown-Forsythe	2.23	3	793.62	0.08
S3-Q2 TEMPORAL IMMEDIACY				
Welch	3.75	3	425.37	0.01
Brown-Forsythe	3.71	3	764.28	0.01
S3-Q3 SOCIAL CONSIENCE				
Welch	1.21	3	429.79	0.31
Brown-Forsythe	1.19	3	779.15	0.31
S3-Q4 PROXIMITY				
Welch	0.86	3	426.92	0.46
Brown-Forsythe	0.89	3	777.90	0.45
S3-Q5 PROXIMITY OF EFFECT				
Welch	1.31	3	423.91	0.27
Brown-Forsythe	1.25	3	769.20	0.29
S3-Q7 IDENTIFYING A MORAL ISSUE				
Welch	2.75	3	425.43	0.04
Brown-Forsythe	2.65	3	765.99	0.05
S3-Q8 MORAL INTENTION				
Welch	2.76	3	429.63	0.04
Brown-Forsythe	2.91	3	787.29	0.03

The multiple comparison test verifies the differences taking place within Q1, Q2, Q7 and Q8, but also specifically identifies that the Class of 2009 is responsible for six of ten between group variations. Specifically in Q1, there are differences between groups 2006-2007, and 2006-2009. In Q2 and Q7 the Class of 2009 is specifically responsible for all six of the variations between groups, and in Q8, the variation is between classes 2008-2006, and 2008-2007 as shown in Table 10.

Table 10.   Scenario-3 Post Hoc, Multiple Comparisons Test

Dependent Variable	(I) Grad Year	(J) Grad Year	(I-J) Mean Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
S3-Q1 MAGNITUDE OF CONSEQUENCES							
	2006	2007	0.43	0.18	0.02	0.08	0.78
		2008	0.34	0.18	0.05	0.00	0.69
		2009	0.38	0.18	0.04	0.02	0.73
S3-Q2 TEMPORAL IMMEDIACY							
	2009	2006	-0.52	0.18	0.00	-0.86	-0.17
		2007	-0.34	0.16	0.03	-0.66	-0.03
		2008	-0.43	0.16	0.01	-0.74	-0.13
S3-Q7 IDENTIFYING A MORAL ISSUE							
	2009	2006	-0.38	0.17	0.02	-0.71	-0.06
		2007	-0.36	0.15	0.02	-0.66	-0.06
		2008	-0.33	0.15	0.03	-0.63	-0.04
S3-Q8 MORAL INTENTION							
	2008	2006	-0.36	0.15	0.01	-0.65	-0.08
		2007	-0.32	0.13	0.01	-0.58	-0.07
		2009	-0.23	0.13	0.08	-0.49	0.03

4.   Scenario-4: Class Data Analysis

As shown in Table 11, the ANOVA has determined that one of the seven questions (Q2) has statistically significant population mean differences between groups.

Table 11.   Scenario-4 ANOVA

S4-Q1 MAGNITUDE OF CONSEQUENCES					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.03	3	2.01	0.74	0.53
Within Groups	2188.88	803	2.73		
Total	2194.91	806			
S4-Q2 TEMPORAL IMMEDIACY					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	39.77	3	13.26	5.12	0.00
Within Groups	2077.06	802	2.59		
Total	2116.83	805			
S4-Q3 SOCIAL CONSIENCE					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.05	3	3.35	1.68	0.17
Within Groups	1599.32	803	1.99		
Total	1609.36	806			
S4-Q4 PROXIMITY					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.68	3	4.23	1.70	0.17
Within Groups	1985.43	797	2.49		
Total	1998.11	800			
S4-Q5 PROXIMITY OF EFFECT					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.39	3	2.46	0.87	0.46
Within Groups	2252.25	797	2.83		
Total	2259.64	800			
S4-Q7 IDENTIFYING A MORAL ISSUE					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.22	3	2.07	0.82	0.48
Within Groups	1996.77	792	2.52		
Total	2002.99	795			
S4-Q8 MORAL INTENTION					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.87	3	0.29	0.13	0.94
Within Groups	1829.73	799	2.29		
Total	1830.61	802			

The Brown-Forsythe and Welch test of equality of means verifies that without assuming Homogeneity of variance the differences in between-means exist for the same question (Q2). This is demonstrated in Table 12.

Table 12.   Scenario-4 Robust Tests of Equality of Means

	Statistic(a)	df1	df2	Sig.
S4-Q1 MAGNITUDE OF CONSEQUENCES				
Welch	0.71	3	428.84	0.55
Brown-Forsythe	0.74	3	782.42	0.53
S4-Q2 TEMPORAL IMMEDIACY				
Welch	5.22	3	425.88	0.00
Brown-Forsythe	5.12	3	765.61	0.00
S4-Q3 SOCIAL CONSIENCE				
Welch	1.83	3	430.13	0.14
Brown-Forsythe	1.71	3	788.16	0.16
S4-Q4 PROXIMITY				
Welch	1.66	3	424.34	0.17
Brown-Forsythe	1.71	3	766.49	0.16
S4-Q5 PROXIMITY OF EFFECT				
Welch	0.86	3	425.65	0.46
Brown-Forsythe	0.88	3	776.63	0.45
S4-Q7 IDENTIFYING A MORAL ISSUE				
Welch	0.82	3	420.00	0.48
Brown-Forsythe	0.83	3	764.24	0.48
S4-Q8 MORAL INTENTION				
Welch	0.12	3	428.42	0.95
Brown-Forsythe	0.13	3	788.72	0.94

The multiple comparison test verifies the differences taking place within Q2, but also specifically identifies that the Class of 2009 is responsible for the variation. In addition, Q3 indicates significant difference between class 2009-2006. The results are summarized in Table 13.

Table 13.   Scenario-4 Post Hoc, Multiple Comparisons Test

Dependent Variable	(I) Grad Year	(J) Grad Year	(I-J) Mean Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
S4-Q2 TEMPORAL IMMEDIACY							
	2009	2006	-0.48	0.17	**0.01**	-0.82	-0.14
		2007	-0.46	0.16	**0.00**	-0.77	-0.15
		2008	-0.56	0.15	**0.00**	-0.87	-0.26
S4-Q3 SOCIAL CONSIENCE							
	2009	2006	0.33	0.15	**0.03**	0.04	0.63
		2007	0.10	0.14	0.46	-0.17	0.37
		2008	0.16	0.14	0.25	-0.11	0.42

5.   Scenario-5: Class Data Analysis

According to Table 14, the ANOVA has determined that two of the seven questions (Q1, Q5) have statistically significant population mean differences between groups. Also Q2(.09) and Q4(.06) were close to the .05 specified criteria. The results of this test are summarized in Table 14 for quick reference.

Table 14.   Scenario-5 ANOVA

S5-Q1 MAGNITUDE OF CONSEQUENCES

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25.45	3	8.48	3.68	0.01
Within Groups	1839.12	797	2.31		
Total	1864.56	800			

S5-Q2 TEMPORAL IMMEDIACY

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.18	3	5.06	2.21	0.09
Within Groups	1828.80	799	2.29		
Total	1843.98	802			

S5-Q3 SOCIAL CONSIENCE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.23	3	1.08	0.62	0.60
Within Groups	1388.32	800	1.74		
Total	1391.55	803			

S5-Q4 PROXIMITY

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	19.45	3	6.48	2.48	0.06
Within Groups	2088.76	798	2.62		
Total	2108.21	801			

S5-Q5 PROXIMITY OF EFFECT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	23.82	3	7.94	3.99	0.01
Within Groups	1581.43	794	1.99		
Total	1605.25	797			

S5-Q7 IDENTIFYING A MORAL ISSUE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.69	3	4.23	1.54	0.20
Within Groups	2194.16	801	2.74		
Total	2206.85	804			

S5-Q8 MORAL INTENTION

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.20	3	1.07	0.44	0.72
Within Groups	1922.45	800	2.40		
Total	1925.66	803			

The Brown-Forsythe and Welch test of equality of means verifies that without assuming Homogeneity of variance the same differences in between-means exist for Q1 and Q5, and is close for Q2 and Q4 as shown in Table 15.

Table 15.   Scenario-5 Robust Tests of Equality of Means

	Statistic(a)	df1	df2	Sig.
S5-Q1 MAGNITUDE OF CONSEQUENCES				
Welch	3.55	3.00	425.68	0.01
Brown-Forsythe	3.72	3.00	776.43	0.01
S5-Q2 TEMPORAL IMMEDIACY				
Welch	2.22	3.00	425.99	0.09
Brown-Forsythe	2.23	3.00	773.70	0.08
S5-Q3 SOCIAL CONSIENCE				
Welch	0.63	3.00	426.87	0.59
Brown-Forsythe	0.62	3.00	774.84	0.60
S5-Q4 PROXIMITY				
Welch	2.54	3.00	426.78	0.06
Brown-Forsythe	2.50	3.00	776.74	0.06
S5-Q5 PROXIMITY OF EFFECT				
Welch	3.95	3.00	426.93	0.01
Brown-Forsythe	4.05	3.00	781.73	0.01
S5-Q7 IDENTIFYING A MORAL ISSUE				
Welch	1.41	3.00	429.37	0.24
Brown-Forsythe	1.57	3.00	782.60	0.20
S5-Q8 MORAL INTENTION				
Welch	0.44	3.00	425.21	0.73
Brown-Forsythe	0.45	3.00	770.09	0.72

The multiple comparison tests in Table 16 verify the
differences taking place within Q1 and Q5, and also Q2 and
Q4 which had a significance value of 0.09 and 0.06
respectively on the ANOVA. Also, the test clearly and
specifically identifies that the Class of 2009 is
responsible for the variation.

Table 16.   Scenario-5 Post Hoc, Multiple Comparisons Test

Dependent Variable	(I) Grad Year	(J) Grad Year	(I-J) Mean Difference	Std. Error	Sig.	95% Confidence Interval	
						Lower	Upper
S5-Q1 MAGNITUDE OF CONSEQUENCES							
	2009	2006	0.34	0.16	0.04	0.02	0.66
		2007	0.48	0.15	0.00	0.19	0.77
		2008	0.34	0.15	0.02	0.05	0.63
S5-Q2 TEMPORAL IMMEDIACY							
	2009	2006	0.33	0.16	0.04	0.01	0.65
		2007	0.33	0.15	0.03	0.04	0.62
		2008	0.13	0.15	0.39	-0.16	0.41
S5-Q4 PROXIMITY							
	2009	2006	0.47	0.17	0.01	0.13	0.81
		2007	0.19	0.16	0.23	-0.12	0.50
		2008	0.23	0.16	0.14	-0.07	0.54
S5-Q5 PROXIMITY OF EFFECT							
	2009	2006	0.34	0.15	0.03	0.04	0.63
		2007	0.45	0.14	0.00	0.18	0.72
		2008	0.36	0.14	0.01	0.09	0.63
S5-Q7 IDENTIFYING A MORAL ISSUE							
	2009	2006	-0.14	0.18	0.43	-0.49	0.21
		2007	-0.23	0.16	0.15	-0.55	0.09
		2008	-0.33	0.16	0.04	-0.64	-0.02

C. GENDER DATA ANALYSIS

1. Scenario-1: Gender Data Analysis

The Independent Samples T-Test for Scenario-1 calculates no significant difference between male and female population means for all seven questions. The findings are summarized on Table 17.

Table 17. Scenario-1 Independent Samples T-Test for GENDER

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif'	Std. Error Dif'	95% Confidence Interval of the Difference	
									Lower	Upper
S1-1	Equal variances assumed	.517	.472	-1.283	807	.200	-.160	.125	-.405	.085
S1-2	Equal variances not assumed	5.182	**.023**	-1.372	284.43	.171	-.176	.128	-.428	.076
S1-3	Equal variances assumed	.831	.362	.014	809	.989	.002	.133	-.260	.264
S1-4	Equal variances assumed	.005	.944	1.362	806	.174	.178	.130	-.078	.433
S1-5	Equal variances assumed	.154	.695	-1.328	807	.185	-.187	.141	-.464	.090
S1-7	Equal variances assumed	1.860	.173	-.301	806	.763	-.043	.141	-.320	.235
S1-8	Equal variances assumed	.350	.554	.366	803	.714	.051	.139	-.223	.325

2. Scenario-2: Gender Data Analysis

The Independent Samples T-Test for Scenario-2 calculates no significant difference between male and female population means for all seven questions, however is very close to the specified criteria value on Q8 with a significance value of .051. Table 18 illustrates the results.

Table 18.   Scenario-2 Independent Samples T-Test for GENDER

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif'	Std. Error Dif'	95% Confidence Interval of the Difference	
									Lower	Upper
S2-1	Equal variances not assumed	6.904	**.009**	-.582	291.146	.561	-.067	.115	-.294	.160
S2-2	Equal variances not assumed	4.943	**.026**	-.258	284.775	.797	-.035	.136	-.304	.233
S2-3	Equal variances assumed	1.223	.269	1.085	806	.278	.127	.117	-.102	.356
S2-4	Equal variances assumed	2.913	.088	-1.391	809	.165	-.197	.142	-.475	.081
S2-5	Equal variances not assumed	6.108	**.014**	-1.078	302.082	.282	-.129	.119	-.363	.106
S2-7	Equal variances assumed	2.589	.108	-.438	809	.661	-.063	.144	-.347	.220
S2-8	Equal variances assumed	.668	.414	1.958	807	.051	.236	.120	-.001	.472

3. Scenario-3: Gender Data Analysis

The Independent Samples T-Test for Scenario-3 calculates one question with a significant difference between male and female population means (Q3). The results are summarized on Table 19.

Table 19.   Scenario-3 Independent Samples T-Test for GENDER

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif'	Std. Error Dif'	95% Confidence Interval of the Difference	
									Lower	Upper
S3-1	Equal variances assumed	.112	.738	-1.421	807	.156	-.209	.147	-.497	.080
S3-2	Equal variances assumed	.009	.926	.064	804	.949	.009	.143	-.272	.290
S3-3	Equal variances not assumed	25.982	**.000**	-3.305	309.359	**.001**	-.336	.102	-.536	-.136
S3-4	Equal variances assumed	2.413	.121	1.210	803	.227	.153	.127	-.095	.402
S3-5	Equal variances assumed	1.045	.307	-1.628	799	.104	-.242	.149	-.534	.050
S3-7	Equal variances assumed	.258	.611	.910	804	.363	.125	.137	-.144	.394
S3-8	Equal variances assumed	2.550	.111	-1.811	805	.071	-.220	.121	-.458	.018

4. Scenario-4: Gender Data Analysis

The Independent Samples T-Test for Scenario-4 calculates one significant difference between male and female population means (Q1) and one close value (.085) for Q8. The results are illustrated in Table 20.

Table 20. Scenario-4 Independent Samples T-Test for GENDER

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Dif'	Std. Error Dif'	Lower	Upper
S4-1	Equal variances not assumed	6.550	**.011**	–2.013	288.499	**.045**	–.263	.131	–.520	–.006
S4-2	Equal variances assumed	2.977	.085	–.610	804	.542	–.087	.142	–.365	.192
S4-3	Equal variances assumed	.899	.343	–1.451	805	.147	–.179	.124	–.422	.063
S4-4	Equal variances assumed	3.231	.073	.387	799	.699	.054	.139	–.220	.328
S4-5	Equal variances assumed	.199	.656	–1.607	799	.108	–.237	.148	–.527	.053
S4-7	Equal variances assumed	.031	.860	–.853	794	.394	–.119	.140	–.394	.155
S4-8	Equal variances assumed	1.578	.209	–1.724	801	**.085**	–.228	.132	–.488	.032

5.   Scenario-5: Gender Data Analysis

The Independent Samples T-Test for Scenario-5 calculates three questions (Q1, Q5, Q8) with statistically significant differences between male and female population means, and one (Q4) very close at .052, as shown in Table 21.

Table 21.   Scenario-5 Independent Samples T-Test for GENDER

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff '	Std. Error Dif'	95% Confidence Interval of the Difference	
									Lower	Upper
S5-1	Equal variances assumed	.809	.369	–2.726	799	**.007**	–.364	.133	–.626	–.102
S5-2	Equal variances assumed	.113	.737	–1.183	801	.237	–.157	.133	–.418	.104
S5-3	Equal variances assumed	.714	.398	–1.350	802	.177	–.156	.115	–.382	.071
S5-4	Equal variances assumed	2.448	.118	1.947	800	**.052**	.277	.142	–.002	.556
S5-5	Equal variances assumed	.684	.409	–2.436	796	**.015**	–.303	.125	–.548	–.059
S5-7	Equal variances assumed	1.120	.290	.941	803	.347	.137	.145	–.149	.422
S5-8	Equal variances assumed	.126	.723	–3.348	802	**.001**	–.452	.135	–.717	–.187

D.   CHAPTER SUMMARY

In this chapter, I analyzed the data described in Chapter III using population mean comparison tests in order to test the two stated null hypothesis. The data were presented along with analysis highlighting where there were statistical differences between population means.

To summarize the class analysis data: of the five scenarios with seven questions each that the ANOVAs and EOMs tested, I determined that 13 questions have statistically significant differences in between-group population means, and, that three more questions were very close to the significance criteria established. The Multiple Comparison tests highlighted that the vast majority of these between-group population differences were specifically between the Class of 2009 (freshman) and the three other classes (2008, 2007, and 2006).

To summarize the Gender analysis data: of the five scenarios with seven questions each that were analyzed using the Independent Samples T-Test, five questions have statistically significant differences in between-group population means, and an additional three questions were very close to the established criteria for significance.

V.   CONCLUSIONS AND RECOMMENDATIONS

A.   CONCLUSIONS

When considering the first hypothesis (there is no difference in the way year groups answer the questions on the EDMI) it is clear that there are significant differences in the way the classes respond to the questions. This requires a rejection of the null and indicates that change in cognitive moral thinking is taking place over time. Each scenario has seven questions correlating to some facet of moral decision making. Based on the ANOVA and EOM tests, of these 35 questions 13 (37.14%) showed a statistically significant different in the way the subjects answered.

When considering the Multiple Comparison test that identifies specifically which classes answered differently, 90% of the statistically significant difference came from the Class of 2009. This clearly indicates a significant difference between the incoming freshman class and the three upper classes when it comes to moral reasoning. It also pointedly highlights that change in moral reasoning, at least as measured by the EDMI, virtually ceases after the first year at the Academy.

Regarding the second null hypothesis, that there is no difference in the way gender groups answer the questions on the EDMI, 14.28% of possible responses were statistically different. In Scenario-1 there was no difference in male/female responses. Scenario-2, 3 and 4 each had one statistically significant question answered differently. Scenario 5 had three questions answered statistically differently by gender. This clearly requires a rejection

of the null hypothesis and seems to be in line with the research that men and women indeed demonstrate differences in moral reasoning. This data also indicates that when the complexity and intensity of the situation increases as it is designed to do in each scenario of the EDMI, the difference in the way the genders respond to the questions also increase, as indicated by Question 5 having three questions with statistically different answers by gender.

In addition to the question of "if" change in moral reasoning is occurring between classes, it is also interesting to identify if the observed change can be categorized as development or moral regression. In order to attempt to interpret development or moral regression the results for Questions 7 (identifying a moral issue), and 8 (intent to act), in each scenario should be examined in more detail. For example, Question 7 asks the subjects if they believe a moral issue is involved in the scenario. The lower the selection on the Likert-scale indicates the more likely the subject feels there is a moral issue involved.

Recapping the results of the data, in four of the five scenarios (1, 2, 3, and 5) the Class of 2009 answered question 7 statistically different. In every instance the mean average of the answers on the Likert-scale was lower from the Class of 2009 when compared to the other classes, suggesting they have a higher likelihood to indicate that that they recognize a moral or ethical issue. Question 8 asks if the subject would choose the same course of action as the character in the scenario.

In each scenario the action taken by the character is the easy, expedient choice for example: Not reporting the

incident in scenario 1, selecting the outspoken Officer in scenario 2, giving an A in scenario 3, doing nothing in scenario 4, and accepting the shady dealer's terms in scenario 5. On the Likert-scale in question 8, a lower score equates to a greater likelihood the subject would make the same decision described in the scenario. In scenario's 1, 2, and 4, the Class of 2009 has a higher mean average score then the other three classes, indicating they would not choose the same action in the scenario, but to be fair only Scenario 2 (selecting the outspoken Officer) was statistically significant for the 2009 class.

Interestingly, in Scenario 3 (giving the "A" to the midshipman) it was the Class of 2008 that had a statistically different percentage than the other classes however, the mean average score was lower indicating they were more likely to choose the same action. In sum, after the freshman year a Midshipman is much less likely to conclude that a moral or ethical issue exists, and is somewhat less likely to report intentions to act appropriately in a moral or ethical situation.

The gender data, according to the way they answered the questions on the EDMI, follows the research, indicating that differences in moral reasoning exist. However, the indicated differences were not as frequent as with the class differences. In regard to gender the difference was significant in 5 of 35 questions: Scenario-3 (question-3), Scenario-4 (question-1), and Scenario-5 (Questions-1, 5, and 8). As in the class data above, Questions 7 (identifying a moral issue), and 8 (intent to act) are examined in detail. Only Question-8 in Scenario-5, the most complex scenario, indicated a statistically different

result. For this question the mean average for women was
4.76 compared to 4.46 for men. Therefore, according to the
EDMI the women statistically indicate a slight difference
in moral cognitive reasoning, and a slightly greater intent
to act properly in a morally complex situation. This data
is consistent with the research discussed in the literature
review.

There are numerous ways to interpret the results
regarding class differences. For example, is the change in
moral cognizance and reasoning due to active exposure to
moral and ethical thought through the ethics courses?
Perhaps this exposure causes a move toward relativism;
alternatively there may be something that the Naval Academy
experience in general does to a student after the first
year that actually reduces ones clarity on moral issues?
Both examples could explain the apparent moral regression
in moral and ethical decision making. As in many research
projects when opening the lid on such a vast sea of data,
more questions arise than are answered.

B.   RECOMMENDATIONS

The possibilities for further research are endless.
First and foremost, the conclusions drawn in this study are
based on the assumption that the Class of 2006 would have
answered the questions on the EDMI the same way the Class
of 2009 did. This is the nature of cross-sectional
research, but this is an extrapolation that may or may not
be accurate. Every year events take place in the ethics
across the curriculum program that could influence the way
in which an entire class views moral issues. The only true
way to determine if change in cognitive moral thought

66

occurs is to re-test the Class of 2009 in 2009. Actually for the most accurate data, perhaps the Class of 2009 should be re-tested each of the four years here at the Academy. This longitudinal approach would ensure an accurate record of change over time.

The EDMI provides a wealth of information that is not easily or readily interpretable. Many avenues of research can be pursued with the vast amount of data collected. Follow on research can and should delve into the eight questions concerning "moral judgment" although caution must be taken in regards to judging ones moral judgment, the data from the eight parts of Question 6 by itself can be made into a study on its own.

Other possibilities for further research include comparing the Midshipmen demonstrating different moral philosophies (EDMI Part I) with the results of Part II, looking to see if one category of moral philosophy is distinguishable from another based on cognitive moral thought as I did between the classes and gender in this study. Such a study may find a philosophy that demonstrates a statistically significantly difference in how someone with one such philosophy cognitively views moral issues. If so, one could possibly look at building a curriculum around teaching Midshipmen to reason from a particular moral philosophy that statistically responds to the scenario based questions more favorably.

Because the data is keyed to the Midshipmen's Mid number, many different demographics can be studied and compared. For example determining how Midshipmen from different races, religious groups, or family-of-origin configurations respond to the EDMI could be examined.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A. EDMI PART I

The subject indicates the extent of their agreement or disagreement with each statement using the following scale.

Strongly disagree	Disagree	Neutral-neither agree nor disagree	Agree	Strongly agree
O	O	O	O	O

1. It is important to follow the law and/or regulations at all times.

2. The most important consideration in reaching a decision is how the outcome will affect me.

3. A person of good character will act with honor as a guide.

4. A decision that has positive outcomes is always a good decision.

5. My faith is the most important basis for making my ethical decisions.

6. The primary ethical obligation is to care for other human beings.

7. Ultimately, there is a set of principles that people should use to make ethical decisions.

8. An action that violates the law is always wrong.

9. The only way to judge whether an action is right is by the outcomes of the action.

10. Good character will always lead to good action.

11. It is not one, but rather a combination of ethical approaches that I use to determine what to do.

12. The most important ethical principle is to ensure that nobody is harmed by your actions.

13. There is generally more than one correct solution to an ethical problem.

14. Rules and laws are the most appropriate basis for making ethical decisions.

69

15. Ethical decisions are ultimately based on religious teachings.

16. What is right in one culture is not necessarily right in another.

17. In making ethical decisions, I always try to do what a person of integrity would do.

18. It is always ethical to show care for another person.

19. When making an ethical decision, each of us look out for our own best interests.

20. You can always evaluate the quality of a decision by the results of the decision.

21. A personal relationship with a divine being is the foundation by which ethical decisions are made.

22. In this world, everyone has to look out for themselves.

23. The legal system and organizational regulations define what is right and wrong.

APPENDIX B. EDMI PART II SCENARIOS

A. SCENARIO 1

As a result of a first-class midshipman "horsing around," some equipment received minor damage, amounting to less than $100. A few other first-class midshipmen witnessed the event. They all believed that the midshipman's perfect conduct and performance record may result in severe penalties if the action is discovered. Moreover, many midshipmen believe that the Company Commander is excessively harsh in dealing with such matters.

Action/decision taken: All those who witnessed the incident decided not to report the incident.

B. SCENARIO 2

During a biweekly meeting of all dental corps officers in a major Naval Dental Center, the director announced that a new department head job was being created within the dental center for a mid-level dental corps officer. Some of the officers were concerned about the fairness of the selection process. Their view was that the director tended to fill positions by circumventing the system. One officer was particularly vocal with concerns that there was clear bias in the selection process. The officer indicated that if the problem continued, an I.G. investigation was in order. When the Director learned of these complaints, the director was very concerned because of the perception tht an accusation of this type could easily get out of hand, disrupt the morale of the dental officers, and even ruin the Director's career.

The most deserving and qualified person for the new position was a quiet, hard-working, dental officer who had performed superbly in the current job. The second candidate was the outspoken officer who threatened to involve outside authorities to resolve the complaints of unfairness.

Action/decision taken: The outspoken officer is selected.

C.   SCENARIO 3

Midshipman 2/C Howe has known his company officer for over two years now, and he gets along well with him. Midshipman Howe spends a certain amount of time n the CO's office talking about personal issues, In one of the discussions, Midshipman Howe said that he was given a "C" instead of the "B" he thought he deserved in chemistry. He said that the instructor was not able to explain why he got the lower grade when his scores added up to a "B."   The company officer did some checking on this instructor and found strong concurrence with other midshipmen and officers that he gave low grades without much rationale. Even the department chair could not defend the grading of this instructor.

When it came time for the company officer to give performance grades for the semester, Midshipman Howe was clearly in the "C" category as rated by his classmates and the senior enlisted. The company officer, however, felt that he should try to make things "right" for Midshipman Howe.

Action/decision taken: The company officer gave Midshipman Howe an "A" in performance.

D.   SCENARIO 4

A civilian supervisor at a DOD agency learns that a subordinate, who was a co-worker prior to the supervisor's promotion, is about to retire after more has 30 years of service. The supervisor discovers that the receipts submitted by the subordinate for $1,500 for a job-related trip taken six months ago were faked. In fact, prior to being promoted, the supervisor had a very strong reason to believe that the receipts were faked, but overlooked it because at the time, as a co-worker, this person felt no responsibility to get involved. Moreover, the supervisor reasons that there is a general belief that "everyone is doing it" to some extent and that nothing is to be gained by starting something now since this person will be retired within a week.

Action/decision taken: The supervisor decides not to do anything.

E.   SCENARIO 5

You are a junior officer deployed to a foreign country and discover that the only source of critical goods and services amounting to millions of dollars is through a dealer in the host country. This person is known to have a monopoly, is the head of the local mob, and manipulates the local government. In addition, there are allegations of skimming off the top. In short, you believe that this person has no ethics, but you need the goods and services. Do you deal with the person to keep the operations going and get your people what they need within a few days or do you take the alternative route of waiting for the Red Cross or some other national source to kick in, knowing from experience that this second option could take a few months? You believe strongly that in doing the right thing you must respect the military code of ethics. In addition, you are concerned about the legal aspects of dealing with this "entrepreneur" on those terms. However, you are also concerned about getting your mission done and you have reason that we may not have the right to impose our "Western" code of ethics on these people.

Action/decision taken: The service member gets the required goods and services from the dealer and accepts the dealer's terms.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C.   EDMI PART II QUESTIONS AND ASSOCIATED CONSTRUCT BEING TESTED

A.   MORAL INTENSITY DIMENSIONS

The subject answers each question following the scenario:

- 1.   The possible harm resulting from the decision within the context of that situation would be:

              Minor   1 2 3 4 5 6 7   Severe

    -Question related to "Magnitude of Consequences."

- 2.   Any negative consequences of that decision are likely to occur:

        After a long time   1 2 3 4 5 6 7   Immediately

        -Question related to "Temporal Immediacy."

- 3.   Most other midshipmen would consider that decision to be:

          Appropriate   1 2 3 4 5 6 7   Inappropriate

        -Question related to "Social Conscience."

- 4.   The specific decision would negatively affect:

   My company   1 2 3 4 5 6 7   People outside of my company

        -Question related to "Proximity."

- 5.   The chances of any negative consequences to those who made the decision occurring as a result of that decision are:

          Not likely   1 2 3 4 5 6 7   Very likely

        -Question related to "Probability of Effect."

B.   MORAL DECISION MAKING

The subject indicates the number that best represents their answer to each question below:

- 6.   *The subject rates the decision made in the scenario based on the following specific factors:*

Just	1 2 3 4 5 6 7	Unjust
Fair	1 2 3 4 5 6 7	Unfair
Morally right	1 2 3 4 5 6 7	Morally wrong
Acceptable to my family	1 2 3 4 5 6 7	Unacceptable to my family
Acceptable in the military's current culture	1 2 3 4 5 6 7	Unacceptable in the military's current culture
Acceptable in the military's historical traditions	1 2 3 4 5 6 7	Unacceptable in the military's historical culture
Does not violate an unspoken assumption of behavior	1 2 3 4 5 6 7	Violates an unspoken assumption of behavior
Does not violate an unwritten policy/ procedure/ instruction	1 2 3 4 5 6 7	Violates an unwritten policy/procedure/ instruction

-Questions related to "Moral judgment."

- 7.   Do you think that there is a moral or ethical issue involved in the above action/decision?

Completely agree   1 2 3 4 5 6 7   Completely disagree

-Question related to "Identifying a Moral Issue."

- 8.   Please indicate the likelihood that you would make the same decision described in the scenario.

Definitely would   1 2 3 4 5 6 7   Definitely would not

-Question related to "Moral Intentions."

APPENDIX D. DESCRIPTIVE STATISTICS

Table 22.   Scenario-1 Class/Gender Descriptive Statistics

Class/Gender	N	Mean	Std. Deviation	Std. Error
S1-Q1 MAGNITUDE OF CONSEQUENCES				
2006	153	3.12	1.36	0.11
2007	218	3.00	1.47	0.10
2008	235	2.91	1.38	0.09
2009	203	3.32	1.48	0.10
Total	809	3.08	1.44	0.05
Men	642	3.04	1.45	0.06
Women	167	3.20	1.39	0.11
S1-Q2 TEMPORAL IMMEDIACY				
2006	153	3.90	1.56	0.13
2007	217	3.85	1.57	0.11
2008	236	3.93	1.58	0.10
2009	203	3.81	1.58	0.11
Total	809	3.87	1.57	0.06
Men	641	3.84	1.60	0.06
Women	168	4.01	1.44	0.11
S1-Q3 SOCIAL CONSIENCE				
2006	153	3.52	1.52	0.12
2007	219	3.33	1.48	0.10
2008	236	3.44	1.51	0.10
2009	203	3.84	1.61	0.11
Total	811	3.53	1.54	0.05
Men	643	3.53	1.56	0.06
Women	168	3.52	1.46	0.11
S1-Q4 PROXIMITY				
2006	153	3.37	1.61	0.13
2007	217	3.14	1.49	0.10
2008	236	3.32	1.44	0.09
2009	202	3.21	1.52	0.11
Total	808	3.25	1.50	0.05
Men	640	3.29	1.51	0.06
Women	168	3.11	1.49	0.11
S1-Q5 PROXIMITY OF EFFECT				
2006	153	3.43	1.61	0.13
2007	218	3.23	1.52	0.10
2008	236	3.38	1.57	0.10
2009	202	3.79	1.74	0.12
Total	809	3.45	1.62	0.06
Men	643	3.42	1.62	0.06
Women	166	3.60	1.61	0.13

Class/Gender	N	Mean	Std. Deviation	Std. Error
S1-Q7 IDENTIFYING A MORAL ISSUE				
2006	153	3.27	1.68	0.14
2007	219	3.09	1.62	0.11
2008	235	3.11	1.63	0.11
2009	201	2.54	1.52	0.11
Total	808	2.99	1.63	0.06
Men	640	2.98	1.64	0.06
Women	168	3.02	1.57	0.12
S1-Q8 MORAL INTENTION				
2006	153	3.95	1.65	0.13
2007	219	3.88	1.56	0.11
2008	232	3.95	1.62	0.11
2009	201	4.17	1.57	0.11
Total	805	3.99	1.60	0.06
Men	639	4.00	1.59	0.06
Women	166	3.95	1.63	0.13

Table 23.   Scenario-2 Class/Gender Descriptive Statistics

Class/Gender	N	Mean	Std. Deviation	Std. Error
S2-Q1 MAGNITUDE OF CONSEQUENCES				
2006	152	4.97	1.32	0.11
2007	217	4.71	1.53	0.10
2008	236	4.77	1.46	0.09
2009	203	4.84	1.42	0.10
Total	808	4.81	1.45	0.05
Men	642	4.79	1.49	0.06
Women	166	4.86	1.28	0.10
S2-Q2 TEMPORAL IMMEDIACY				
2006	152	4.14	1.57	0.13
2007	217	4.13	1.71	0.12
2008	236	4.19	1.63	0.11
2009	204	3.88	1.81	0.13
Total	809	4.09	1.69	0.06
Men	643	4.08	1.73	0.07
Women	166	4.11	1.52	0.12
S2-Q3 SOCIAL CONSIENCE				
2006	152	5.43	1.32	0.11
2007	217	5.51	1.48	0.10
2008	235	5.48	1.35	0.09
2009	204	5.76	1.18	0.08
Total	808	5.55	1.34	0.05
Men	641	5.58	1.36	0.05

Class/Gender	N	Mean	Std. Deviation	Std. Error
Women	167	5.45	1.26	0.10
S2-Q4 PROXIMITY				
2006	153	3.15	1.57	0.13
2007	218	3.25	1.75	0.12
2008	236	3.16	1.55	0.10
2009	204	3.36	1.66	0.12
Total	811	3.23	1.64	0.06
Men	643	3.19	1.66	0.07
Women	168	3.39	1.52	0.12
S2-Q5 PROXIMITY OF EFFECT				
2006	152	5.07	1.43	0.12
2007	217	4.98	1.60	0.11
2008	236	5.13	1.54	0.10
2009	202	5.23	1.49	0.10
Total	807	5.10	1.52	0.05
Men	640	5.08	1.57	0.06
Women	167	5.20	1.32	0.10
S2-Q7 IDENTIFYING A MORAL ISSUE				
2006	153	2.75	1.60	0.13
2007	218	2.85	1.77	0.12
2008	236	2.61	1.69	0.11
2009	204	2.28	1.52	0.11
Total	811	2.62	1.67	0.06
Men	643	2.60	1.70	0.07
Women	168	2.67	1.54	0.12
S2-Q8 MORAL INTENTION				
2006	153	5.66	1.51	0.12
2007	218	5.73	1.46	0.10
2008	235	5.69	1.36	0.09
2009	203	6.03	1.23	0.09
Total	809	5.78	1.39	0.05
Men	642	5.83	1.39	0.05
Women	167	5.59	1.38	0.11

Table 24.   Scenario-3 Class/Gender Descriptive Statistics

Class/Gender	N	Mean	Std. Deviation	Std. Error
S3-Q1 MAGNITUDE OF CONSEQUENCES				
2006	153	4.41	1.51	0.12
2007	217	3.98	1.75	0.12
2008	236	4.06	1.70	0.11
2009	203	4.03	1.74	0.12
Total	809	4.10	1.70	0.06
Men	641	4.05	1.71	0.07
Women	168	4.26	1.62	0.13
S3-Q2 TEMPORAL IMMEDIACY				
2006	153	4.20	1.63	0.13
2007	216	4.03	1.72	0.12
2008	233	4.12	1.57	0.10
2009	204	3.69	1.64	0.11
Total	806	4.00	1.65	0.06
Men	639	4.00	1.64	0.07
Women	167	3.99	1.66	0.13
S3-Q3 SOCIAL CONSIENCE				
2006	153	5.79	1.22	0.10
2007	215	5.86	1.24	0.08
2008	236	5.67	1.38	0.09
2009	204	5.66	1.44	0.10
Total	808	5.74	1.33	0.05
Men	642	5.67	1.37	0.05
Women	166	6.01	1.11	0.09
S3-Q4 PROXIMITY				
2006	152	2.15	1.36	0.11
2007	216	2.18	1.52	0.10
2008	235	2.23	1.41	0.09
2009	202	2.37	1.49	0.10
Total	805	2.24	1.45	0.05
Men	639	2.27	1.47	0.06
Women	166	2.11	1.40	0.11
S3-Q5 PROXIMITY OF EFFECT				
2006	151	4.64	1.64	0.13
2007	213	4.32	1.82	0.12
2008	233	4.34	1.67	0.11
2009	204	4.40	1.70	0.12
Total	801	4.41	1.71	0.06
Men	634	4.36	1.70	0.07
Women	167	4.60	1.76	0.14

Class/Gender	N	Mean	Std. Deviation	Std. Error
S3-Q7 IDENTIFYING A MORAL ISSUE				
2006	152	2.88	1.57	0.13
2007	215	2.85	1.57	0.11
2008	235	2.82	1.60	0.10
2009	204	2.49	1.52	0.11
Total	806	2.76	1.57	0.06
Men	640	2.78	1.59	0.06
Women	166	2.66	1.50	0.12
S3-Q8 MORAL INTENTION				
2006	152	5.78	1.30	0.11
2007	217	5.74	1.35	0.09
2008	234	5.41	1.47	0.10
2009	204	5.65	1.41	0.10
Total	807	5.63	1.40	0.05
Men	640	5.58	1.41	0.06
Women	167	5.80	1.33	0.10

Table 25.   Scenario-4 Class/Gender Descriptive Statistics

Class/Gender	N	Mean	Std. Deviation	Std. Error
S4-Q1 MAGNITUDE OF CONSEQUENCES				
2006	153	4.20	1.55	0.13
2007	218	4.33	1.69	0.11
2008	234	4.30	1.64	0.11
2009	202	4.12	1.70	0.12
Total	807	4.24	1.65	0.06
Men	644	4.19	1.70	0.07
Women	163	4.45	1.43	0.11
S4-Q2 TEMPORAL IMMEDIACY				
2006	153	3.78	1.62	0.13
2007	218	3.76	1.60	0.11
2008	233	3.86	1.64	0.11
2009	202	3.30	1.58	0.11
Total	806	3.67	1.62	0.06
Men	642	3.66	1.64	0.06
Women	164	3.74	1.56	0.12
S4-Q3 SOCIAL CONSIENCE				
2006	153	4.56	1.32	0.11
2007	219	4.79	1.39	0.09
2008	234	4.74	1.50	0.10
2009	201	4.90	1.39	0.10
Total	807	4.76	1.41	0.05
Men	643	4.72	1.43	0.06
Women	164	4.90	1.35	0.11
S4-Q4 PROXIMITY				
2006	153	3.31	1.51	0.12
2007	218	3.29	1.71	0.12
2008	231	3.14	1.48	0.10
2009	199	2.99	1.59	0.11
Total	801	3.18	1.58	0.06
Men	640	3.19	1.61	0.06
Women	161	3.14	1.48	0.12
S4-Q5 PROXIMITY OF EFFECT				
2006	152	4.39	1.59	0.13
2007	217	4.38	1.71	0.12
2008	232	4.26	1.68	0.11
2009	200	4.16	1.72	0.12
Total	801	4.29	1.68	0.06
Men	639	4.24	1.69	0.07
Women	162	4.48	1.62	0.13

Class/Gender	N	Mean	Std. Deviation	Std. Error
S4-Q7 IDENTIFYING A MORAL ISSUE				
2006	148	2.64	1.50	0.12
2007	215	2.53	1.58	0.11
2008	232	2.50	1.57	0.10
2009	201	2.38	1.67	0.12
Total	796	2.50	1.59	0.06
Men	634	2.48	1.59	0.06
Women	162	2.60	1.56	0.12
S4-Q8 MORAL INTENTION				
2006	151	4.82	1.38	0.11
2007	218	4.82	1.56	0.11
2008	233	4.76	1.57	0.10
2009	201	4.85	1.49	0.11
Total	803	4.81	1.51	0.05
Men	640	4.77	1.53	0.06
Women	163	4.99	1.44	0.11

Table 26.   Scenario-5 Class/Gender Descriptive Statistics

Class/Gender	N	Mean	Std. Deviation	Std. Error
S5-Q1 MAGNITUDE OF CONSEQUENCES				
2006	152	4.37	1.43	0.12
2007	218	4.23	1.49	0.10
2008	232	4.37	1.56	0.10
2009	199	4.71	1.57	0.11
Total	801	4.42	1.53	0.05
Men	638	4.34	1.54	0.06
Women	163	4.71	1.45	0.11
S5-Q2 TEMPORAL IMMEDIACY				
2006	152	3.67	1.44	0.12
2007	218	3.67	1.43	0.10
2008	232	3.88	1.58	0.10
2009	201	4.00	1.58	0.11
Total	803	3.81	1.52	0.05
Men	640	3.78	1.50	0.06
Women	163	3.94	1.58	0.12
S5-Q3 SOCIAL CONSIENCE				
2006	153	3.61	1.28	0.10
2007	217	3.67	1.28	0.09
2008	232	3.73	1.37	0.09
2009	202	3.79	1.31	0.09
Total	804	3.70	1.32	0.05
Men	641	3.67	1.32	0.05
Women	163	3.83	1.31	0.10
S5-Q4 PROXIMITY				
2006	153	4.33	1.54	0.12
2007	215	4.60	1.56	0.11
2008	232	4.56	1.68	0.11
2009	202	4.80	1.66	0.12
Total	802	4.59	1.62	0.06
Men	639	4.64	1.63	0.06
Women	163	4.37	1.58	0.12
S5-Q5 PROXIMITY OF EFFECT				
2006	153	4.47	1.31	0.11
2007	214	4.36	1.39	0.09
2008	230	4.45	1.48	0.10
2009	201	4.81	1.42	0.10
Total	798	4.52	1.42	0.05
Men	636	4.46	1.43	0.06
Women	162	4.76	1.36	0.11

Class/Gender	N	Mean	Std. Deviation	Std. Error
S5-Q7 IDENTIFYING A MORAL ISSUE				
2006	153	2.94	1.51	0.12
2007	218	3.03	1.57	0.11
2008	233	3.13	1.73	0.11
2009	201	2.80	1.75	0.12
Total	805	2.99	1.66	0.06
Men	642	3.01	1.68	0.07
Women	163	2.88	1.56	0.12
S5-Q8 MORAL INTENTION				
2006	152	3.74	1.52	0.12
2007	218	3.57	1.57	0.11
2008	233	3.71	1.56	0.10
2009	201	3.68	1.53	0.11
Total	804	3.67	1.55	0.05
Men	641	3.58	1.53	0.06
Women	163	4.03	1.57	0.12

85

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF REFERENCES

Boland-Prom, K., & Anderson S.C. (2005), Teaching ethical decision making using dual relationship principles as a case example. *Journal of Social Work Education, 41*(3), 495-510.

Brugman, D., & Aleva. E. (2004, September), Developmental delay or regression in moral reasoning by juvenile delinquents? *Journal of Moral Education, 33*(3), 321-338.

Christopher, J. C., Manaster, G. J., Campbell, R. L., & Weinfeld, M. B. (2002), Peak experiences, social interest, and moral reasoning: an exploratory study. *The Journal of individual Psychology, 58*(1).

Clark, T. M. (2004). *Moral Development at the United States Naval Academy: The Midshipman's Perspective.* Master's Thesis. Monterey, California: Naval Postgraduate School.

Cohn, L. D., & Westenbeg, M. P. (2004), Intelligence and maturity: Meta-analytic evidence for the incremental and discriminate validity of Loevinger's measure of ego development. *Journal of Personality and Social Psychology, 86*(5), 760-772.

Colemand, R., & Wilkins, L. (2004), The moral development of journalists: a comparison with other professions and a model for predicting high quality ethical reasoning. *J&MC Quarterly, 81*(3), 511-527.

Dawson, T. L. (2002), New tools, new insights: Kohlberg's moral judgment stages revisited. *International Journal of Behavioral Development, 26* (2), 154-166.

Dursun, S., Morrow, R. O., & Beauchamp, D. L. J. (2004). Defence ethics survey report: Dimensions of moral intensity and ethical decision-making: An empirical study of Department of National Defence (DND) employees and Canadian Forces (CF) members. *Department of National Defence & Canadian Forces.*

Fraedrich, J., Cherry, J., King II, J., & Guo, C. (2005), An empirical investigation of the effects of business ethics training. *Marketing Education Review, 15*(3).

Hardy, S. A., & Carlo, G. (2005), Identity as a source of moral motivation. *Human Development, 48,* 232-256.

Hattab, A. S. (2004), Current trends in teaching ethics of healthcare practices. *Developing World Bioethics, 4*(2), 160-172.

Holmes, E. (2003). *Report of the working-group on instrument evaluation*. United States Naval Academy: Stockdale Center for Ethical Leadership.

Kidder, R. M. (2006). *Capstone moral leadership seminars: Adapting Kidder's work on moral courage to midshipman programs at the U.S. Naval Academy*. Capstone Leadership Series: United States Naval Academy Office of Officer Development.

Kohlberg, L. (1984). The psychology of moral development: The nature and validity of moral stages. *San Francisco: Harper & Row.*

Krettenauer, T. (2004), Metaethical cognition and epistemic reasoning development in adolescence. *International Journal of Behavioral Development, 28*(5), 461-470.

Lau, A. S. (2004), Teaching engineering ethics to first-year college students. *Science and Engineering Ethics, 10*(2), 359-368.

Leenders, I., & Brugman, D. (2005), Moral/non-moral domain shift in young adolescents in relation to delinquent behavior. *British Journal of Developmental Psychology, 23,* 65-79.

Magun-Jackson, S. (2004), A psychological model that integrates ethics in engineering education. *Science and Engineering Ethics, 10*(2).

Mathes, M. (2004, December), Ethical decision making and nursing. *MEDSURG Nursing, 13*(6), 429-431.

Nidich, R. J., Nidich, S. I., & Alexander, C. N. (2005), Moral development and natural law. *Journal of Social Behavior and Personality, 17,* 137-149.

Piper, D. (2004, April), Moral development, transformative learning, and the dialogical self. *Westminister Studies in Education, 27*(1), 44-55.

Pierce, A. C. (2003). *Ethics and character development assessment process results of Phase I: Conceptual overview (a.k.a. "The White Paper")*. United States Naval Academy: Stockdale Center for Ethical Leadership.

Rest, J., Narvaez, D., Bebeau, M. J., & Thoma, S. J. (1999), *Postconventional moral thinking: A neo-Kholbergian approach.* Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Rest, J., Edwards, L., & Thoma S. J. (1997), Designing and validating a measure of moral judgment: stage preference and stage consistency approaches. *The Journel of Educational Psychology, 89*(1), 5-28.

Ryan, M. K., David, B., & Reynolds, K. J. (2004), Who cares? The effect of gender and context on the self and moral reasoning. *Psychology of Women Quarterly, 28*, 246-25.

Schwickert, E. M. (2005), Gender, morality, and ethics of responsibility: complementing teleological and deontological ethics. *Hypatia, 20*(2), 165-187.

Simson, R. S. (2005, January), Feminine thinking. *Social theory and practice, 31*(1).

Sirin, S. R., Brabeck, M. M., Satiani, A., & Rogers-Serin, L. (2003), Validation of a measure of ethical sensitivity and examination of the effects of previous multicultural and ethics courses on ethical sensitivity. *Ethics and Behavior, 13*(3), 221-235.

Thoma, S. J. (2002), An overview of the Minnesota approach to research and moral development. *Journal of Moral Education, 31*(3).

United States Naval Academy (2002). *United States Naval Academy Mission.* Retrieved July 15, 2005, from http://www.usna.edu/StrategicPlan/htmls/sp_mission.html.

THIS PAGE INTENTIONALLY LEFT BLANK

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
    Ft. Belvoir, Virginia

2. Dudley Knox Library
    Naval Postgraduate School
    Monterey, California

3. Dr. Brad Johnson
    United States Naval Academy
    Leadership Ethics & Law
    Annapolis, Maryland

4. Dr. Linda Mallory
    United States Naval Academy
    Office of Institutional Research
    Annapolis, Maryland

5. Major Wayne Beyer
    United States Naval Academy
    7th Company Officer
    Annapolis, Maryland

6. Marine Corps Representative
    Naval Postgraduate School
    Monterey, California

7. Director, Training and Education,
    MCCDC, Code C46
    Quantico, Virginia

8. Director, Marine Corps Research Center,
    MCCDC, Code C40RC,
    Quantico, Virginia

9. Marine Corps Tactical Systems Support Activity
    (Attn: Operations Officer)
    Camp Pendleton, California